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MTMC REPORT OA 77-2

ANALYSIS OF MTMC PARTICIPATION IN THE REFORGER 77 EXERCISE

FEBRUARY 1978

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MILITARY TRAFFIC MANAGEMENT COMMAND
TRANSPORTATION ENGINEERING AGENCY
NEWPORT NEWS, VIRGINIA 23606

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DEPARTMENT OF THE ARMY
HEADQUARTERS
MILITARY TRAFFIC MANAGEMENT COMMAND
WASHINGTON, D.C. 20315

REPLY TO
ATTENTION OF:

MT-C

1 February 1978

SUBJECT: Report on Analysis of MTMC Participation in REFORGER 77

Vice Chief of Staff
United States Army
Washington, DC 20310

1. The 1977 version of the Return of Forces to Germany (REFORGER) exercise again expressed our Nation's commitment to the defense of Europe. While REFORGER exercises have traditionally provided troops to operate prepositioned equipment, a division deployed with its equipment for the first time in REFORGER 76. REFORGER 77 was a combination of past REFORGER concepts with elements of the 1st Infantry Division (Mechanized), deploying troops by air to prepositioned equipment, and elements of the 4th Infantry Division (Mechanized) deploying to the European theater with personnel by air and equipment by sea.

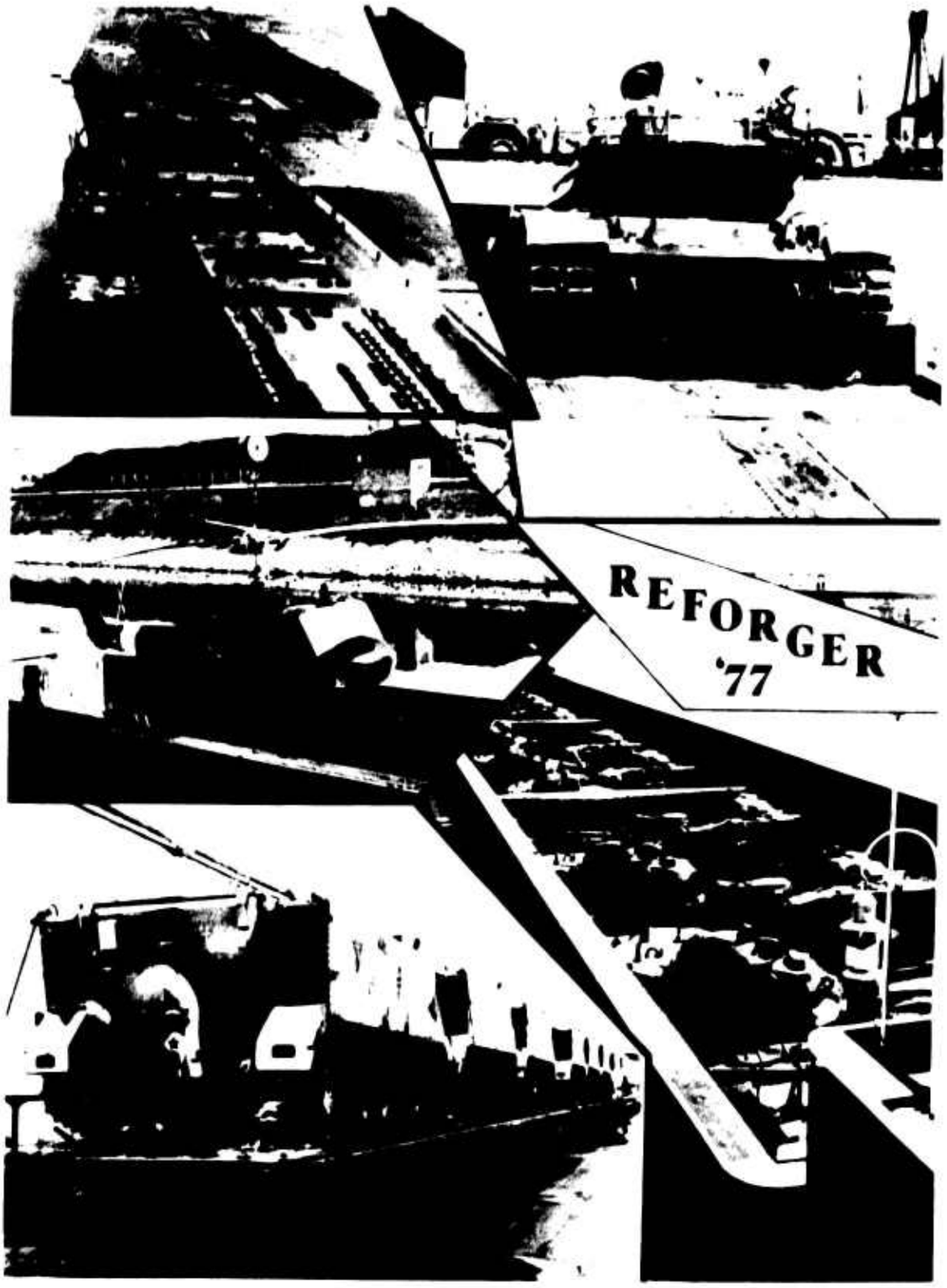
2. Mobility studies performed by the Military Traffic Management Command (MTMC) during the past four years have concluded that an airlift (troops only)/sealift deployment of division units is time competitive with an all airlift deployment and results in a considerable savings in dollars and fuel. Like REFORGER 76, REFORGER 77 tested MTMC's capabilities in the areas of traffic management and terminal operation. This analysis of the MTMC role in the exercise is prepared with the hope that future exercise participants will benefit from the experiences described and the suggestions made for improvement.

3. This report outlines the transportation planning activities that took place for the REFORGER 77 exercise. Covered in detail are the technical aspects involved in rail loading and movement of units at Forts Carson and Riley and the highway movement of equipment from Forts Campbell, Hood, Jackson, and Bliss to the Military Ocean Terminal, Bayonne (MOTBY), New Jersey, for staging and loading of cargo on ships at MOTBY, ocean transit, unloading at the Ports of Amsterdam, The Netherlands, and Ghent, Belgium, and the return move through Bremerhaven, Germany, Rotterdam, The Netherlands, Bayonne, New Jersey, and Beaumont, Texas, to home station. The report addresses the lessons learned during REFORGER 76, their application to REFORGER 77, and the lessons learned during this exercise.

MT-C 1 February 1978
SUBJECT: Report on Analysis of MTMC Participation in REFORGER 77

4. While some minor problems and technical difficulties were encountered during the exercise, overall the deployment and redeployment phases of REFORGER 77 were most successfully accomplished. The exercise provided valuable training for the deploying units as well as for the deployment planners. The coordination and application of host nation support agreements and procedures in Europe were outstanding in all areas. This report is recommended for study at all levels, since many of the principles learned during REFORGER 77 are applicable to all unit deployments.

H. R. DEL MAR
Major General, USA
Commanding


REFORGER
'77

MTMC REPORT OA 77-2

ANALYSIS OF MTMC PARTICIPATION IN THE REFORGER 77 EXERCISE

February 1978

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Distribution limited to US Government agencies only; test and evaluation (28 February 1978). Other requests for this document must be referred to Commander, Military Traffic Management Command, ATTN: MT-SA, Washington, DC 20315.

ABSTRACT

This study is an analysis of the MTMC participation in the REFORGER 77 exercise. It is designed to provide a documentary narrative of the exercise deployment and redeployment and an evaluation of the MTMC performance in the discharge of its REFORGER mission. Although problems in planning and execution have been identified and corrective actions recommended, the deployment and redeployment of the 1st and 4th Infantry Divisions (Mechanized)(-) was a highly successful operation. REFORGER 77 clearly demonstrated the Defense Transportation System's total approach capability to support the movement of the equipment of a mechanized infantry division from a CONUS origin to a potential combat employment destination overseas.

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SECTION I

EXECUTIVE SUMMARY

1. Objective. To analyze MTMC participation in REFORGER 77.

2. Scope. This analysis is generally limited to those aspects of the deployment and redeployment of elements of the 1st Infantry Division (M)(-) and the 4th Infantry Division (M)(-) and their supporting units for which MTMC had transportation planning and/or operational responsibilities.

3. Background. As a result of the benefits derived from exercising the central European line of communication (LOC) during REFORGER 76, the concept for REFORGER 77 was revised from the historic REFORGER concept (personnel airlift and pre-positioned equipment linkup) to that of incorporating airlift of personnel and sealift of equipment. As revised, the concept for REFORGER 77 significantly increased MTMC's participation in the exercise.

4. Conclusions. The REFORGER 77 deployment/redeployment was a highly successful operation from the initial planning phase through the execution phase. The success of the exercise can be attributed to the professionalism of personnel involved, to the spirit of cooperation and enthusiasm that prevailed throughout the exercise, and finally, to the benefits accrued from the lessons learned during REFORGER 76.

5. Summarized recommendations. It is recommended that:

a. Greater emphasis be placed on the requirement for an early, firm, and accurate deployment equipment list.

b. Transportation documentation procedures be further simplified for unit deployments utilizing dedicated shipping.

c. The requirement for railcar load training at both installation and unit level be accentuated.

d. Deploying units insure that equipment is properly prepared for shipment to facilitate transportation operations.

e. Installation and unit training include procedures for properly identifying, loading, marking, and documenting sensitive and hazardous cargo.

f. MTMC planners of future REFORGER exercises, when coordinating berth selection for the USNS Comet, make allowances for that ship's roll-on/roll-off (RORO) ramp limitations.

g. Redeployment port operators be provided the templates used during initial prestow to permit continuous documented adjustments to the stow plan as redeployment progresses.

h. REFORGER deploying units utilize MILVAN instead of CONEX to containerize unit impedimenta.

i. Surveys continue to be conducted on designated REFORGER ships to compare ships' drawings and prestow plans with actual ship configuration.

j. The concept of barging REFORGER cargo continue to be utilized as a cost-effective mode when operations permit.

k. Ship's gear be fully operational on Ready Reserve Force ships used during future contingencies or exercises.

l. Various planning, operational, and procedural problems identified in this report be noted and corrective action taken in future deployment exercises and operations.

SECTION II

INTRODUCTION

1. Subject. An analysis of MTMC participation in the REFORGER 77 Exercise.

2. Objective. To analyze MTMC participation in REFORGER 77.

3. Scope. This analysis is limited to the deployment and redeployment of elements of the 1st Infantry Division (Mechanized)(-) and of elements of the 4th Infantry Division (Mechanized)(-) and supporting units, for which movements MTMC has transportation planning and/or support responsibilities. REFORGER 77 operations, while not the responsibility of MTMC, were evaluated to the extent necessary to identify transportability problems within the cognizance of MTMC. Specifically, with reference to REFORGER 77, the Commander, MTMC, was responsible for:

a. Providing transportation planning support for REFORGER 77 to the OJCS, the unified and specified commands, and the military services.

b. Providing traffic management support for the movement of REFORGER 77 equipment and personnel within CONUS.

c. Arranging for the utilization of ocean terminals (military and commercial) within CONUS.

d. Controlling and coordinating the movement of REFORGER 77 equipment into and out of CONUS water terminals.

e. Supervising CONUS water terminal operations, consisting of REFORGER 77 equipment receipt, segregation, staging, and loading aboard ship.

f. Providing technical liaison and assistance to the appropriate Host Nation authorities in unloading and loading of REFORGER 77 equipment and the associated handling, staging, processing, accounting, and documenting functions in Europe.

4. Study parameters: The following phases of REFORGER 77 are keyed to one or more of the aforementioned responsibilities and are examined in this analysis:

a. Conceptual and operational planning.

b. Shipload planning.

c. REFORGER 77 cargo documentation.

d. Unit deployment from CONUS.

e. Cargo discharge at European ports.

f. Unit redeployment from Europe.

g. Discharge in CONUS and return to home station.

5. Background. REFORGER 77 was originally planned to be conducted in the same manner as REFORGER exercises prior to 1976, with selected units deploying to Europe by air to utilize pre-positioned equipment for participation in NATO exercises; however, due to benefits derived from exercising the central European line of communications during REFORGER 76[1/], the concept for REFORGER 77 was changed to incorporate both airlift and sealift deployment of equipment, thereby permitting further exercise of European Host Nation technical agreements. REFORGER 77 deployment thus involved the airlift of personnel and minimum equipment, from elements of the 1st Infantry Division (Mechanized)(-) and the 4th Infantry Division (Mechanized)(-) and the sealift of equipment of the 4th Infantry Division (Mechanized)(-), plus selected augmentation forces from CONUS to Europe.

1/ USCINCEUR message 201311Z Sep 76, Strategic Mobility Exercise and REFORGER 77 Revised Concept.

SECTION III

CONCEPT AND PRE-EXERCISE STAFF PLANNING

1. Concept approval.

a. The initial concept for REFORGER 77 was that of historical REFORGER exercises (that is, 1st Infantry Division (M)(-) airlifted to Europe and the exercise of pre-positioned equipment), and was proposed by USCINCEUR in May 1976. This concept was approved by OJCS in June 1976.

b. The REFORGER 77 concept was revised to include a combination airlift and sealift deployment of approximately 11,300 troops (later increased to 12,039) and equipment. It was designed, in part, to exercise the Military Traffic Management Command's capability to move and stage equipment at seaports of embarkation and load the equipment aboard Military Sealift Command (MSC)-controlled ships. The Military Airlift Command (MAC) was to exercise its surge capability. Equipment and personnel entering Europe through both sea and aerial ports of debarkation would permit the exercise of technical agreements associated with Belgium, The Netherlands, and Luxembourg (BENELUX) lines of communication. Selected units of the deploying force were to be issued pre-positioned equipment, then move to a major unit assembly area for tactical employment in a field training exercise (FTX) conducted by VII US Corps. Following the FTX, major weapons would be test fired, maintenance would be performed on equipment, and the equipment would be returned to storage or redeployed with the CONUS forces.

c. A major problem that soon surfaced was that of funding. JCS REFORGER exercise funds in the FY 77 and 78 budgets were programed to support historical-type REFORGER exercises. HQDA notified CINCUSAREUR in early November 1976 that these funding levels did not appear adequate to support the revised concept; thus accurate cost estimating increased in significance.

d. As with past REFORGER exercises, a firm deployment equipment list was not available early in the planning cycle, hindering accurate cost planning by all participants. HQ MTMC, using table of organization and equipment (TOE) data, produced an initial estimate for CONUS line-haul, CONUS and European port handling, and ocean transit charges. Department of the Army (DA) was advised that final cost estimates could not be completed until unit selection was firm and seaport of debarkation (SPOD) designated. HQ US Army Forces Command (FORSCOM), on 24 November 1976, provided HQDA with a REFORGER 77 troop list/funding message,

which DA readdressed to MTMC for information, requesting that MTMC provide Military Sealift Command (MSC) with preliminary sealift requirements. Using the information provided by FORSCOM, MTMC provided planning data to MSC for the sea deployment of a brigade headquarters, two tank battalions, one mechanized infantry battalion, and a support battalion. Potential choices for the CONUS seaport of embarkation (SPOE) included Beaumont, Texas; Mobile, Alabama; Bayonne, New Jersey; and Charleston, South Carolina. While Great Lakes ports were considered initially, they were eliminated because of sparse staging areas and Saint Lawrence Seaway locking problems with the GTS Admiral William M. Callaghan, (hereafter referred to as GTS Callaghan).

e. At a 2 December 1976 Pentagon meeting, MAC proposed to use REFORGER 77 to test its concept of using a single east coast aerial port as the primary deployment point for major units. MTMC nonconcurred with the MAC concept because of increased Army funding requirements for surface movements to a single aerial port, and the variation of that concept from current wartime plans. HQDA representatives agreed with MTMC and stated that the Army would not concur in MAC's proposal. The proposal was not further pursued, and USAF airfields near the major deploying unit locations were agreed upon as follows:

(1) Fort Riley - Tinker Air Force Base, Oklahoma

(2) Fort Carson - Peterson Field, Colorado

(3) Fort Hood - Bergstrom Air Force Base, Texas

(4) Fort Lewis - McChord Air Force Base, Washington

(5) Fort Bliss - Biggs Air Force Base, Texas

During the course of this meeting, MSC and United States Atlantic Command representatives indicated a preference for the use of an east coast SPOE to reduce sealift costs.

f. On 3 December 1976, HQ MTMC provided HQDA and other concerned commands initial cost estimates for CONUS line-haul and port handling for unit equipment deploying by sea. This estimate of $3,006,000 for rail line-haul costs and $949,000 for port-handling costs was based on Fort Carson, Colorado, as the point of origin, and on Bayonne, New Jersey, as the SPOE. Actual port selection awaited the results of further MTMC total system cost analysis and the consideration of maintaining wartime deployment realism. Cost data relative to port selection were provided by MTMCEA for the ports of Beaumont, Texas; Bayonne, New Jersey; Mobile, Alabama; and Charleston, South Carolina. The data consisted of ship

positioning, ship dispatch, and TDY costs, in addition to port-handling and stevedoring costs. These major cost elements indicated that Beaumont was cost-favorable by some $378,000 ($5,575,881 versus $5,594,673 for Bayonne); however, for numerous reasons, MTMCEA recommended the use of Bayonne. The advantages were closer command supervision, closed loop security, and superior communications, billeting, messing, and troop support facilities. There was also an abundance of covered and outside storage space, backup maintenance and deficiency processing capability, sophisticated RORO equipment, and berthing facilities. MOTBY provided the advantage of loading both vessels at a single work site. The MSC preference for an east coast port was also considered during the port selection process. HQ MTMC then formally recommended to HQDA that the Military Ocean Terminal Bayonne (MOTBY), New Jersey, be used to support REFORGER 77.

g. The Chief of Naval Operations, on 7 December 1976, proposed that two ships, either one MSC roll-on/roll-off (RORO) and one National Defense Reserve Fleet Seatrain vessel, or one MSC RORO and one NDRF break-bulk vessel, be employed in REFORGER 77. Commander, MTMC, on 10 December, supported the nomination of a suitable RORO ship, the GTS Admiral William M. Callaghan, and a Puerto Rico class NDRF Seatrain as the ship mix for the exercise. The USNS Comet was selected by MSC as the backup vessel to support the exercise if the renovation of the NDRF Seatrain could not be completed on time.

h. In late January 1977, representatives of MTMC Transportation Terminal Group, Europe (TTGE); 4th Transportation Brigade; HQ EUCOM; Military Assistance Advisory Group (MAAG), The Netherlands; HQ USAREUR; and The Netherlands Ministry of Defense (MOD) visited the port of Amsterdam, The Netherlands, to determine its suitability for use during REFORGER 77. The survey was a basis for The Netherlands MOD to offer the port of Amsterdam as The Netherlands port for REFORGER 77 discharge. At the EUCOM/Host Nation REFORGER Planning Conference in early February 1977, the port of Amsterdam was offered, and the Belgian MOD offered the port of Ghent. Arrival of the ships was set for 31 August 1977, with discharge commencing on 1 September 1977.

i. On 7 February 1977, HQDA advised MTMC of USAREUR and FORSCOM concurrence in the selection of MOTBY and provided formal DA approval for its use as both the SPOE for deployment and SPOD for re-deployment in support of REFORGER 77. Two days later, CNO announced that the GTS Admiral William M. Callaghan and a Puerto Rico-class Sea-train would be the primary ships, and USNS Comet would be the backup ship for REFORGER 77. On 11 February 1977, HQ MTMC designated Commander, MTMCEA, as MTMC's executive agent and REFORGER 77

exercise director for all CONUS surface transportation and port operation aspects of the exercise. Commander, MTMC TTGE was designated as the MTMC executive agent and REFORGER 77 exercise director for BENELUX/FRG SPOD/E operations during deployment and redeployment. Director, MTMCTEA was directed to provide necessary assistance to Commanders, MTMCEA and MTMC TTGE and to develop an analysis of MTMC participation in REFORGER 77.

2. Operational planning:

a. Once the deployment port of embarkation (POE) had been designated, sealift composition determined, and origins of the deployment equipment identified, definitive operational planning commenced. Movement staffs of the units deploying equipment and installation transportation personnel engaged in preliminary coordination with MTMC.

b. The principal planning focus early in this phase concerned development of accurate information regarding the type and volume of deploying equipment. The urgency of developing these data on a timely basis was caused by several considerations. The Military Sealift Command was required to identify the types and quantities of cargo lashing gear necessary to secure the equipment on the selected vessels. The number of trains required to support the line-haul had to be identified so that prospective rail routings to the POE could be carefully analyzed. The specific types and quantities of railcars required at loading installations had to be determined. The requirements for commercial highway support from those installations where the cargo volume did not warrant special train service had to be scrutinized. The anticipated level of support required to stage and load the equipment at MOTBY was another consideration. Finally, hinging on determinations of the preceding requirements, cost estimates for the CONUS deployment phase were crucial to HQ FORSCOM for exercise budget planning. The need for early lift determination was also paramount in USAREUR, where coordination on discharge port operations and anticipated LOC movement support requirements was ongoing with the Ministers of Defense of the participating Host Nations. The leadtime needed for negotiations among Host Nation governments, national civilian contractors, and HQ USAREUR was cited as the primary reason an early equipment listing was required.

c. During the period 21 through 23 February 1977, MTMC TTGE and the appropriate Host Nation Ministry of Defense port officials conducted port surveys of Amsterdam, The Netherlands, and Ghent, Belgium, to formulate the SPOD concepts of operation. Joint decisions concerning the exact berth site for each ship, method of ship discharge, locations of temporary port staging areas, and port clearance procedures were made.

Port support requirements, such as, rail loading ramps, MTMC TTGE office space, and locations for non-MTMC elements, were identified.

d. Early in March 1977, MTMC advised HQ FORSCOM of the necessity for a single headquarters to coordinate and provide consolidated equipment deployment requirements to MTMC. HQ FORSCOM was advised by HQ MTMC that separate listings of incomplete data submitted by multiple participating units, received without FORSCOM's prior approval, were inhibiting orderly planning; however, equipment listings submitted by the 1st Infantry Division (M)(-) and 4th Infantry Division (M)(-) did suffice for accomplishment of initial MTMC prestow planning. This prestow effort revealed that in general the equipment listed could be accommodated by the GTS Admiral William M. Callaghan and a seatrain vessel of the Puerto Rico class. Simultaneously, it was determined that the backup vessel, the USNS Comet, was capable of lifting the anticipated Seatrain load. Throughout March 1977, action officers coordinated such matters as cargo documentation, preliminary vessel schedules, and rail loading plans. In Europe, meanwhile, the HQ MTMC TTGE staff coordinated details with the Host Nations and HQ USAREUR for the discharge of equipment and its clearance from Amsterdam and Ghent. This action involved the formal presentation for contract negotiation of port service requirements for REFORGER 77.

e. The planning tempo continued to accelerate in April 1977, when two major planning milestones were accomplished. On 25 April 1977, the Commander, MTMC, reviewed the results of a MTMCEA analysis of potential rail routings to be used in support of deployment and approved the selection of 2 of the 27 routings considered for the movement of 4 trains from Fort Carson to MOTBY. The two routes were considered optimum from the standpoint of transit time and cost and control. The second major event, in April 1977, and perhaps the key event of the entire operational planning phase, was the US Readiness Command REFORGER 77 Transportation Planning Conference held at USREDCOM Headquarters, from 26 to 29 April April 1977. During this conference, MTMC presented an overview of its CONUS and European roles, responsibilities, and capabilities and presented support requirements to the major participating units and interested major commands. Proposed schedules for key operations--for example, rail moves, ship arrivals and departures, and so forth--were presented, discussed, and coordinated with the concerned commands. During the meeting, MSC presented a proposal, based on ship per diem savings, to utilize the GTS Admiral William M. Callaghan on two round trips, instead of one round trip, between Northern Europe and the CONUS east coast during the interim between deployment and redeployment sealifts. (To accommodate this proposal, the redeployment schedule was adjusted 4 days.) The MSC decision not to employ the SS Washington for such

interim use was also presented. Following the USREDCOM Planning Conference, MTMC continued detailed planning for the rail movements from Forts Carson and Riley and highway line-haul movements from Forts Bliss, Hood, Jackson, and Campbell to MOTBY. Specific requirements for types and quantities of railcars were coordinated by MTMC with the concerned installation transportation officers and submitted to the supporting railroads.

f. On 25 May 1977, a port support planning meeting was held at MOTBY to explain the functions and responsibilities of port support elements and to define the capabilities of MOTBY to administratively support the 1st COSCOM, 1st Infantry Division (M)(-), 4th Infantry Division (M)(-), and HQ USREDCOM personnel who would be present at MOTBY during deployment and redeployment.

g. Prestow planning for the GTS Admiral William M. Callaghan, SS Washington, and the USNS Comet was continually refined as adjustments to the original equipment listings were submitted by the deploying units. Unit integrity and optimum space utilization within safety and ship seaworthiness considerations were overriding factors.

h. In late May, the Department of the Navy informed the Department of the Army of a Maritime Administration proposal that, during redeployment, the Seatrain SS Washington discharge its returning equipment at Beaumont, Texas, instead of at MOTBY. This proposal was offered because, upon completion of its support to REFORGER 77, the SS Washington would be permanently stationed as a component of the Ready Reserve Force (RRF) at Beaumont, and an overall saving could be realized to the RRF program if the ship redeployed to Beaumont. DA requested MTMC appraisal of the DN/MARAD proposal. MTMC response indicated a capability to support the discharge at Beaumont. Based upon this response, and with HQ FORSCOM concurrence, DA approved the redeployment of equipment aboard the SS Washington through Beaumont. As a result of the adjustment in the SS Washington's redeployment POD, prestow plans were revised so that all equipment returning to Texas installations would be carried aboard the SS Washington and discharged at Beaumont. A briefing on the proposed operation was prepared and an inspection of facilities available, to include a review of support requirements at Beaumont, was conducted for all concerned commands at the MTMC Gulf Outport Office - Beaumont, on 29 June 1977.

i. During July 1977, operational planning consisted primarily of refining details and coordinating schedules to insure that rail and highway equipment to support the movements was at the proper location at the correct time and that the units involved were prepared to present the designated equipment for loading. MTMC negotiations with the railroads

concerning additional time allowances for loading and unloading, reduced rate for the movement of tracked vehicles, and an equipment substitution rule facilitating attainment of railcar minimums resulted in a substantial cost avoidance.

j. In early August 1977, unofficial information indicated that serious deficiencies had been revealed during activation of the SS Washington from the National Defense Reserve Fleet (NDRF) and that the ship's participation in the sealift was doubtful. On 9 August 1977, the Maritime Administration formally announced that mechanical problems encountered during sea trials had forced the withdrawal of the SS Washington from the exercise. MSC designated the USNS Comet as the substitute deployment ship. Adjustments were made with minimal impact on the deployment operation. Based upon MARAD projections that the defects would be corrected and necessary testing accomplished by mid-September 1977, MTMC continued redeployment planning on the premise that the SS Washington would participate.

k. Operational planning for the European redeployment phase was initiated and coordinated among MTMC TTGE, Headquarters 4th Transportation Brigade, and Headquarters USAREUR.

3. Summary. The conceptual and operational planning for REFORGER 77 was successful. The favorable termination of this phase can be attributed essentially to the professionalism of the personnel involved, the spirit of cooperation and positivism that prevailed, and finally to the lessons learned from REFORGER 76. An obviously aggressive effort by the principals in maintaining open coordination channels and clearly defined areas of responsibility was conducive to the successful planning effort. The soundness and adaptability of MTMC operational planning for support of REFORGER 77 was conclusively demonstrated by the response to changes in the sealift composition. The single area in this planning stage that should receive increased attention in future exercises is the requirement for an early and accurate determination of equipment to be deployed. Once an accurate requirement is developed, capabilities can be evaluated and the necessary level of support determined on a timely basis. This approach does not minimize the flexibility necessary for any military operation, but is vital to the planning effort for support of a high-profile peacetime exercise during times of budgetary and manpower constraints; also, it is vital to the requirement for Host Nation support coordination.

SECTION IV

SHIPLOAD AND PRESTOW PLANNING

1. General. Detailed shipload and prestow planning is indispensable for an exercise such as REFORGER 77. The necessary ingredients to insure accurate planning are precise ship diagrams and characteristics and exact movement requirements and equipment characteristics. In addition, discharge plans at the SPOD must be of primary concern in the development of the prestow plan.

2. Ship description.

a. The characteristics of the three ships used to transport REFORGER 77 equipment are presented in table 4-1, and the ships are pictorially displayed in figures 4-1 through 4-3.

b. The two RORO ships have stern- and side-loading ramps, are self-sustaining, have cargo hatches for lift-on, lift-off operations, and have internal ramps to load the roll-on decks. The SS Washington, activated from the James River National Defense Reserve Fleet (NDRF) for REFORGER 77, is a tanker converted to a break-bulk ship and is specifically designed to transport large equipment. It has four decks, one loading hatch, and two 50-ton deck-mounted cranes.

TABLE 4-1
VESSEL DESCRIPTIONS

Name	Type	Speed	Length	Capacity
GTS Admiral William M. Callaghan	RORO	25.0 kt	694 ft (211.5 m)	167,537 sq ft (15,564 m^2)
USNS Comet	RORO	18.0 kt	499 ft (152.0 m)	86,478 sq ft (8,033 m^2)
SS Washington	Break-bulk	16.5 kt	560 ft (170.6 m)	Total dwt 12,292 tons (60,000 sq ft)

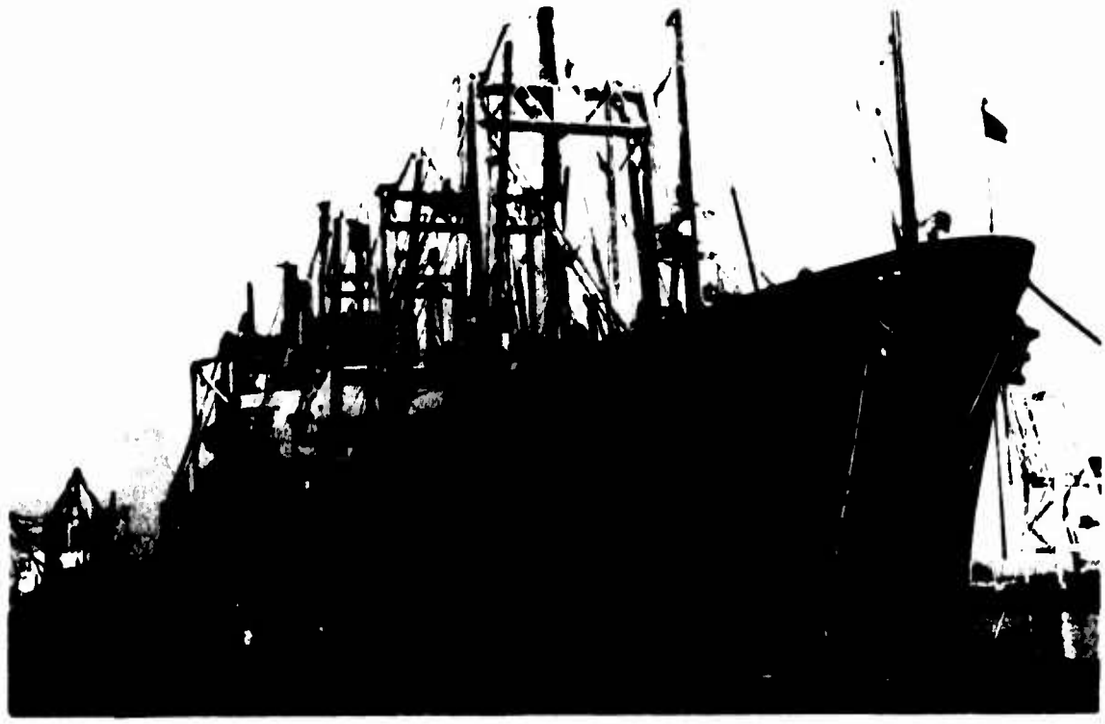

Figure 4-1. USNS Comet, RORO ship.

Figure 4-2. GTS Admiral William M. Callaghan, RORO ship.

Figure 4-3. SS Washington, Puerto Rico class Seatrain ship.

3. Ship surveys. The GTS Admiral William M. Callaghan, SS Washington, and the backup ship, the USNS Comet, were surveyed by MTMC personnel prior to the actual REFORGER loadout to confirm the accuracy of the prestow plans. The ships were checked for current configurations, height clearances, and lifting capacities of ship's gear. The onsite surveys resulted in minor adjustments of prestow plans to accommodate for ship configurations that were not readily apparent on ship diagrams. The progress of Norfolk Shipyard repairs on the SS Washington was monitored by MTMC through visits to the shipyard to inspect the vessel and by liaison with MSC and MARAD.

4. Prestow planning.

a. Accuracy of data is the key to effective prestow planning. The ship characteristics were confirmed with the aforementioned onsite surveys. The initial movement requirements and equipment characteristics, as contained in the COMPASS printout, were available early in the planning stage. Although revisions and changes were made to the original movement requirements, there was a marked improvement in the accuracy and timeliness of REFORGER 77 movement requirements when compared with the REFORGER 76 exercise.

b. During April 1977, the initial prestow plans were developed for the GTS Admiral William M. Callaghan and the SS Washington. The prestow plans maintained unit integrity and prime mover/trailer combinations and were designed to make maximum use of ship's gear and RORO capability. These initial prestow plans were provided to MTMC TTGE for coordination of Host Nation support and SPOD operations. These same stow plans were utilized for the redeployment phase of REFORGER 77.

c. The prestow plans were developed utilizing an 80-percent stowage factor (that is, 80 percent of the square footage of stowage space on the ship was considered usable for planning purposes).

d. The prestow plans indicated that the volume of equipment to be moved on the two ships would require a tight stow, particularly on the SS Washington; therefore, scale template prestow diagrams were developed for the two primary ships. (Later, as the availability of the SS Washington became questionable, a scale template was constructed for the USNS Comet.) Based on a recommendation in the REFORGER 76 analysis, MTMCTEA had developed clear plastic templates of all types of equipment to be moved in REFORGER 77. These templates were utilized by MTMCEA and were far superior to the paper type of template used in REFORGER 76 prestow planning. The templates were placed on plastic ship deck schematics and transferred to paper using an ammonia-light process gas-ozalid machine. These template diagrams confirmed the prestow plans and provided the terminal operators with a very detailed guide for ship-loading.

e. Frequent minor alterations of equipment to be moved caused ship stowage updates, but the most significant alteration to the stow plans resulted from the decision to redeploy the SS Washington through the port of Beaumont, Texas, vice MOTBY. This change required restow of all Texas-based unit equipment from the GTS Admiral William M. Callaghan to the SS Washington to accommodate inland movements from the port to home station. This major revision of the prestow was accomplished in a timely manner, and revised plans were dispatched to all concerned.

f. The prestow efforts of MTMC planners was epitomized by the immediate availability of load plans for the USNS Comet, which allowed a smooth transition from use of the SS Washington to the USNS Comet. This decision was made by MSC just 3 days prior to the scheduled start of ship-loading.

g. Equipment planned for loading aboard the GTS Admiral William M. Callaghan and USNS Comet/SS Washington is listed in table 4-2.

TABLE 4-2
SHIP PRESTOW DATA

Ship	Total MTON	Total Pieces	M-60 Tanks	Other Tracks	Wheeled Veh	CONEX	Misc Cargo	Heli-copters
GTS Callaghan	25,526	976	74	158	635	66	43	0
SS Washington/ USNS Comet	10,992	520	34	25	340	97	21	3
Total	36,518	1,496	108	183	973	163	64	3

5. Summary.

a. Shipload and prestow planning was professionally conducted. Farsighted in scope and pursued in detail, the planning was the cornerstone of the successful REFORGER 77 port operations. Lessons learned from REFORGER 76 were thoroughly incorporated. Communication channels among the REFORGER units and MTMC elements with regard to ship stowage plans were excellent.

b. It must be emphasized that physical surveys of REFORGER-nominated ships are essential to confirm the accuracy of ship diagrams and characteristics during the prestow planning stage.

SECTION V

REFORGER 77 EQUIPMENT DOCUMENTATION PROCEDURES

1. General.

a. Based on significant documentation problems encountered during REFORGER 76, the Commander, MTMCEA, was tasked with developing and initiating a simplified documentation procedure for the movement of REFORGER 77 cargo. (This procedure would also be applicable to contingency unit moves.)

b. The primary objective of the simplified documentation procedure was to alleviate the administrative burden imposed on the deploying units utilizing MILSTAMP procedures.

2. REFORGER 77 documentation procedure.

a. The deploying units accomplished the following actions:

(1) Provided equipment lists and transportation control number (TCN) assignments (fig 5-1) via commercial air signature service to Military Ocean Terminal, Bayonne, New Jersey.

(2) Stenciled the TCN, weight, cube, and POD code on each piece of cargo and equipment being deployed.

b. The installation transportation officer of the deploying unit's home station initiated a Government bill of lading (GBL) for each railcar, listed its cargo by TCN, and consolidated the GBLs by train. The GBL package was delivered to MOTBY prior to the trains' arrival via Federal Air Express hand-to-hand service.

c. MOTBY performed the following documentation functions.

(1) Upon receipt of the equipment lists and TCN assignments from deploying units, MOTBY manipulated the data into MILSTAMP format and keypunched transportation control and movement document (TCMD) cards. The ADP section produced hard-copy TCMDs (Form 1384) for each shipment unit and used those data as advanced TCMDs.

(2) The ADP section forwarded the hard-copy TCMD to the advance documentation unit.

W55ROL

EQUIPMENT LIST & TCN ASSIGNMENT
(Commercial Carrier Movement)

UNIT: 121st Signal | UIC: WAH2AA | PROJECT CODE: ** JG2 | TYPE PLAN: Cat A Eq: Cat B: | DATE: | PAGE IX

COMM SPH H	TYPE PACK	TRL/CONT NUMBER	TRANSPORTATION CONTROL NO. (To be furn by Trans. Div)	VEH/PKG NUMBER	VEHICLE NOMENCLATURE or CONEX CONTENTS	MODEL NUMBER	USA NO or CONEX NO.	DIMENSIONS IN INCHES Length	Width	Height	ACTUAL WEIGHT	ACTUAL CUBE
		221806	WAH2AA7213Z101XXX				A 1244150	102"	75"	82.5"	7220	365.0
		282331	WAH2AA7213Z102XXX			MJQ-10	A 1244149	102"	75	82.5"	7070	365.0
			WAH2AA7213Z103XXX	A27T1	Gen Set Trlr Mtd	MJQ-10	C	166"	83"	93.4"	6500	744.7
			WAH2AA7213Z104XXX	A27T2	Gen Set Trlr Mtd	M885	C	166"	83	93.4"	6300	744.7
			WAH2AA7213Z105XXX	A-37	Truck Cargo 1-1/4T	M885	C 1244151 1244152	218.5"	79.8"	101	7700	1019.0
			WAH2AA7213Z106XXX	A-38	Truck Cargo 1-1/4T	M885	C 1244153 1244154	218.5	79.8"	101	7400	1019.0
			WAH2AA7213Z107XXX	A-36	Truck Cargo 1-1/4T	M885	C 1244148	218.5	79.8"	101	7400	1019.0
			WAH2AA7213Z108XXX	A-35	Truck Cargo 1-1/4T	M885	C 1244146 1244147	218.5	79.8	101	7500	1019.0
			WAH2AA7213Z109XXX	A-34	Truck Cargo 1-1/4T	M885	C 1244144 1244143	218.5"	79.8"	101"	7700	1019.0
			WAH2AA7213Z110	A-33	Truck Cargo 1-1/4T	M885	1244141 1244142	218.5"	79.8"	101"	7600	1019.0
			WAH2AA7213Z111	A-32	Truck Cargo 1-1/4T	M885	C 1244140 1244139	218.5	79.8"	101"	7700	1019.0
			WAH2AA7213Z112XXX	A-31	Truck Cargo 1-1/4T	M885	1244137, 1244136 C	218.5	79.8"	101"	7600	1019.0

Figure 5-1. Typical unit equipment list and TCN assignment.

(3) When each train's GBL package was received, it was given to the advance documentation unit, which then assembled the appropriate TCMDs in job bags in preparation for the receipt of REFORGER cargo.

(4) The assembled job bags were given to the contract management branch and passed to the Universal Maritime Service Corporation (stevedores), which received the cargo, annotated the receipt date on the appropriate TCMD, pulled copy 1, and placed the remainder of the copies on the cargo.

(5) During shiploading, one copy of the TCMD was removed by a checker for ocean manifest preparation and filing.

d. All ADP functions and computer techniques necessary to maintain audit trails, to achieve MSC unit-level billing, to record contractor pay, and to insure compatibility with receiving POD requirements were accomplished by MTMCEA.

3. Results.

a. The REFORGER 77 documentation procedures worked satisfactorily. The end product (that is, ocean cargo manifests and supporting documentation) was complete and accurate, and the deploying units were relieved of the responsibility for generating accurate TCMDs in MILSTAMP format. The administrative burden associated with MILSTAMP/computer-oriented documentation requirements, however, was not reduced but merely shifted from the shipping unit to the Military Ocean Terminal, Bayonne, New Jersey. It is questionable whether this individual piece control documentation procedure would be feasible for a high-volume force deployment. For instance, to deploy one division-size unit from home station through MTMC CONUS ports, utilizing REFORGER 77 documentation procedures, approximately 6,000 individual TCMDs would be required as compared with 1,500 for REFORGER 77. It is doubtful if the port documentation system could support the volume involved. Procedures for large unit moves would, at a minimum, entail a considerable expenditure of time and manpower, not to mention cost, in TCMD preparation, distribution, updating, and processing. The myriad opportunities for documentation error under these procedures potentially reduces the reliability of documentation accuracy.

b. Although the REFORGER 77 documentation procedures proved to be superior to the standard procedures used during REFORGER 76, it is recommended that consideration be given to the following two alternatives:

(1) Require that major units designated for deployment in any future contingency or exercise maintain prepunched TCMDs on file at home stations, conceivably in the installation transportation office. This file would require periodic updating and be available for immediate transmission to the selected SPOE. This proposal would serve a purpose; it would provide documentation data for immediate dispatch, and would provide the local installation transportation officer with a complete inventory of a unit's equipment. He could thus readily generate the necessary transportation requirement to transport the unit to a designated port. The SPOE would use this data as an advance file and, upon arrival of equipment, would simultaneously receipt for and load the cargo.

(2) Since major deployments will, in all probability, use dedicated transport modes (that is, special trains, controlled commercial highway assets, and specific dedicated ships) MILSTAMP documentation could be eliminated with COMPASS data used to identify material to be shipped, to provide essential transportation planning data, and to develop the unit port call message. The unit port call message, in conjunction with COMPASS data, would be used to obtain clearances and provide advance notice to intermediate transshipment points. GBLs prepared for line-haul movement would be used as a check against COMPASS data to confirm that an item has been shipped. The GBLs or COMPASS data can also be used to verify cargo receipt at the SPOE, and manual preparation of the ocean manifest could be accomplished using the annotated COMPASS list.

4. Summary. The modified documentation procedures employed during REFORGER 77 were much improved over those used during REFORGER 76 exercise and resulted in usable data that were extremely important for successful POD operations in Europe; however, consideration should be given to further simplification of documentation procedures for unit deployments using dedicated shipping.

SECTION VI

UNIT PORT CALL AND INSTALLATION OUTLOADING

1. Unit port call.

a. The MTMCEA port call message, dated 8 July 1977, instructed the 1st Infantry Division (M)(-) and 4th Infantry Division (M) (-) to schedule equipment to arrive at the SPOE by ship and by unit. That is, unit equipment to be shipped on the SS Washington or USNS Comet was to be placed on train number 1 and the remainder on train number 2; and the unit equipment to be loaded on the GTS Admiral William M. Callaghan was to be placed contiguously on the remaining railcars of train 2 and on trains 3, 4, and 5. Mixing of equipment designated for loading aboard different ships was not permitted on the same railcar. Equipment from other locations (Forts Bliss, Hood, Campbell, and Jackson) was designated to move via commercial truck. In addition, three helicopters were to self-deploy Fort Hood.

b. The port call message was concise, well coordinated, and accommodated REFORGER unit and SPOE requirements.

c. The REFORGER units complied with the port call message except for the inclusion of 19 railcars of GTS Callaghan equipment on train number 1. This change from the port call message was fully coordinated with MTMCEA prior to its execution, and cargo reception plans were appropriately modified.

d. The REFORGER 77 port call message was a marked improvement over that of REFORGER 76. Cooperation between the deploying units and MTMCEA on this subject insured timely response to required operational changes and contributed to a well-coordinated inland movement of equipment to the SPOE.

2. Fort Riley installation outloading.

a. Installation survey. Since the Fort Riley railcar requirement was relatively small (56 cars), a rail survey to determine the rail outloading capability for REFORGER 77 was considered unnecessary; however, it is desirable that such a survey be conducted in the future. (A MTMC rail survey has been scheduled during 1978.) Certain facility improvements will be required if the installation is to be capable of supporting large-scale outloading operations. At present many earthen loading ramps are in a poor state of repair, and rail spurs have deteriorated (figs 6-1 and 6-2).

Figure 6-1. Earth loading ramp at Fort Riley.

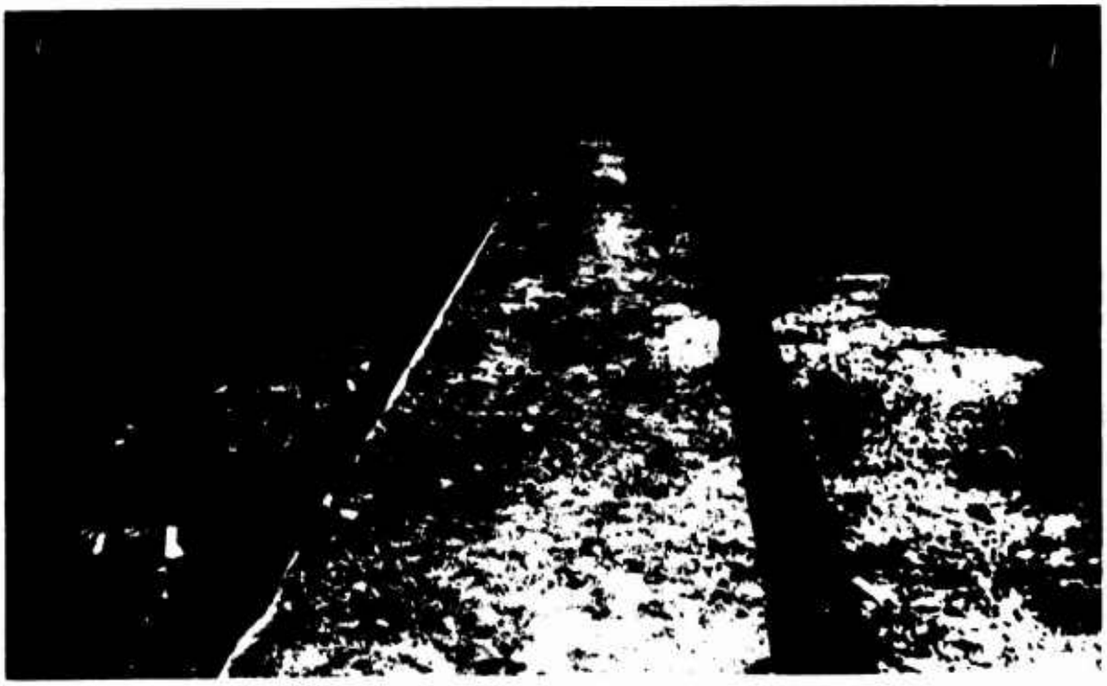

Figure 6-2. Rail spur at Fort Riley.

b. Rail facility description.

(1) The rail system at Fort Riley is depicted in figure 6-3. It consists of two areas: Camp Funston and Camp Whitside.

(2) The Camp Whitside area (fig 6-4) has four rail spurs positioned between a double row of warehouse buildings with side-loading ramps. The area is suitable for loading general cargo, containers, and CONEXs; however, there is insufficient staging area for a large number of vehicles and trailers. Fifty railcars could be spotted in this area for loading or storage. The Camp Funston area (figs 6-5 and 6-6) has two main rail spurs, with eight loading points. This area is well suited for roll-on loading of railcars. Adequate staging areas and permanent end-loading ramps are available.

(3) Table 6-1 summarizes Fort Riley's available facilities and railcar spotting capacities.

(4) The ITO and DTO at Fort Riley stated that the post's sustained daily outloading capacity is 60 cars (loaded and secured).

c. Rail outloading assistance.

(1) MTMC representatives visited Fort Riley, Kansas, from 25 through 30 July 1977, to provide technical assistance to the 1st Infantry Division (M) (-) during rail outloading operations for the REFORGER 77 exercise. This assistance was given in consonance with the MTMC function of providing traffic management support to insure maximum responsiveness and economy in military transportation operations.

(2) A MTMC offer to conduct rail outloading training classes 90 days prior to the actual outloading was not accepted by the 1st Infantry Division (M) (-).

(3) The 1st Division (M) (-) published a complete training program for their REFORGER units. Rail outloading was one of 23 subjects to be taught between 1 July 1977 and the REFORGER departure date. Rail loading training was scheduled in two phases. Phase 1 was training for unit rail loading teams (1 officer, 1 NCO, 1 driver, and 1 guide). The ITO conducted this training, using six DODX flatcars to demonstrate tiedown procedures. (Note: No DODX cars were used in the Fort Riley move.) Phase II training plans required that personnel trained in Phase I return to their units to present rail training for unit personnel. Apparently this training was not conducted, since no records were available at the G-3 office to substantiate it. (The ITO later stated that the majority of the personnel trained in Phase I were not present during the actual rail loadout.)

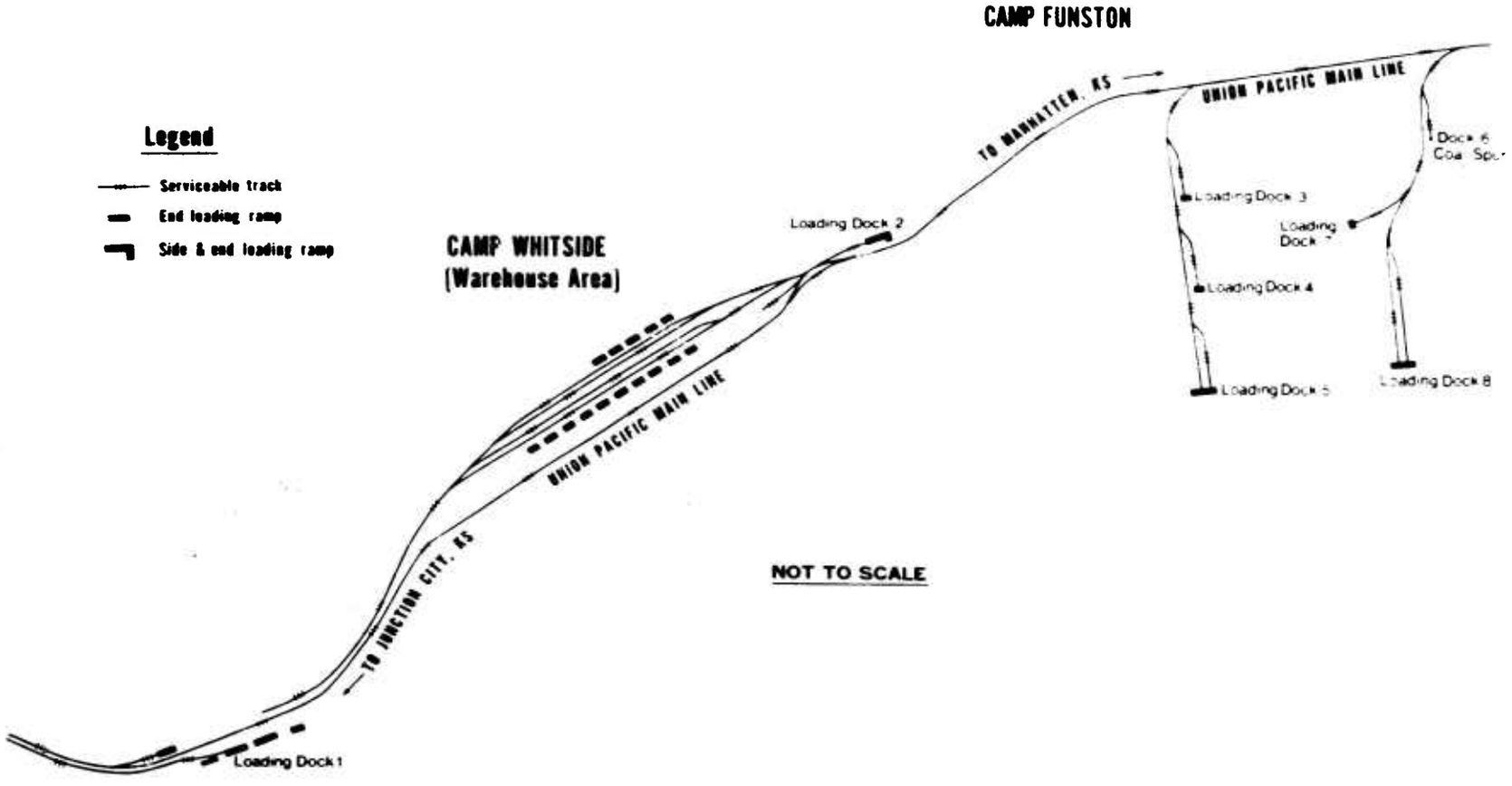

Figure 6-3. Fort Riley rail system.

Figure 6-4. Camp Whitside area.

Figure 6-5. Camp Funston area.

Figure 6-6. Camp Funston area.

TABLE 6-1
FORT RILEY RAIL FACILITIES

Loading Dock	Railcar Capacity	Type of Ramp
Camp Funston		
1	20	Earthen end ramp
2	11	None
3	4	Earthen end ramp
4	11	" " "
5 (·bblespur)	41	" " "
6	*	None
7	6	Earthen end ramp
8 (doublespur)	36	" " "
Camp Whitside		
16	50	Side ramps on 16 warehouse buildings
Total	179	

*Quantity unknown. Type: coal, bilevels, and trilevels.

d. Rail outloading operations.

(1) Rail outloading operations commenced on 26 July 1977 and were completed by 29 July 1977. Four loading sites were used (docks 4, 7, 8, and Whitside), with each unit loading and securing its own equipment. Table 6-2 summarizes the actual train loading schedule.

TABLE 6-2
FORT RILEY TRAIN LOADING SCHEDULE

Site	Commodity	26 July	27 July	28 July	29 July	Total
Whitside	CONEX	4 gondolas	NA	4 gondolas	C O	8
4	M561 1-1/4-ton trk (Gamma goats)	NA	NA	3 DF 60-ft flats 4 60-ft flats 1 53-ft flat	M P L E T E	8
7	M151 1/4-ton trk M416 1/4-ton trl	NA	NA	6 60-ft flats	T I E	5
8	2-1/2-ton trk 5-ton trk M880 1-1/4-ton trk Assorted trl	NA	13 53-ft flats 20 DF 60-ft C/T	NA	D O W N	33
Total						55

Recapitulation by Type

	26 July	27 July	28 July	29 July	Total
53-ft flats	NA	13	1	NA	14
DF 60-ft C/T	NA	20	3	NA	23
60-ft flats	NA	NA	10	NA	10
Gondolas	4	NA	4	NA	8
Total	4	33	18	NA	55

(2) Equipment to be loaded was staged by type of vehicle and by unit in a secure staging area conveniently located between loading sites 7 and 8 (fig 6-7).

(3) Prime movers and trailers were loaded together, when possible, with the trailer hooked to the prime mover (fig 6-8). The 1/4-ton trucks and trailers were loaded 2 abreast with 10 pieces of equipment loaded on each 60-foot flatcar. Gondolas were loaded with eight CONEX boxes per car (fig 6-9) and were secured by tying the last CONEX to the railcar with wire rope. With the exception of the CONEX and one shelter, all equipment was driven onto the railcars. A mobile crane was used to load the CONEX and shelter (fig 6-10).

Figure 6-7. Equipment staging area at Fort Riley.

Figure 6-8. Trailers and prime movers hooked together.

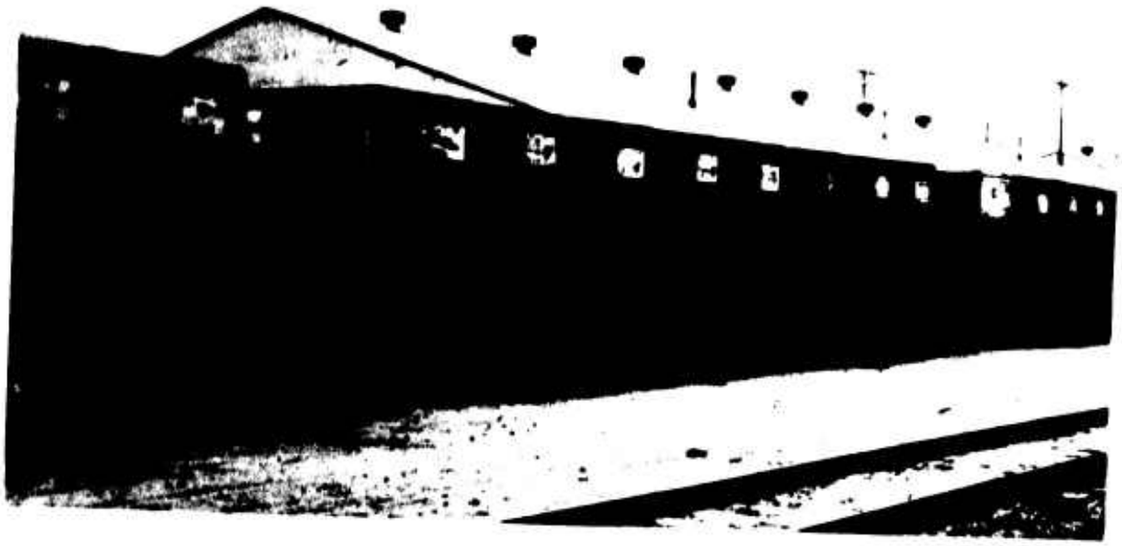

Figure 6-9. CONEXs in gondolas.

Figure 6-10. CONEX loading.

(4) Loading operations were conducted daily from 0800 until 1700 hours and proceeded smoothly with only one delay. On 28 July 1977 loading operations were delayed for 5 hours awaiting the arrival of the Union Pacific engine to spot railcars at sites 4 and 7. (Fort Riley does not have an onsite switch engine and depends entirely on the Union Pacific scheduled train that passes through the area three times per week.)

(5) The Fort Riley train, consisting of 56 railcars (including a guard car), departed as scheduled on 1 August 1977.

e. Problem areas.

(1) The lack of a comprehensive division rail outload training program and the use of unit loading teams instead of a division loading team led to inconsistency in tiedown and chocking and blocking methods. These difficulties were overcome by the relatively small number of cars to be loaded and the more than sufficient time allowed for outloading.

(2) Recurring noncompliance with AAR loading rules was as follows:

(a) Vehicles loaded over the railcar brake wheel did not allow the clearances required by Section 1, Rule 2, of the AAR (fig 6-11).

Figure 6-11. Vehicle over railcar brake wheel.

(b) Nailing angles on wheel chocks were not proper.

(c) Toe-in nails were not initially placed on the inside of wheel chocks.

(d) Wire rope and chain tiedowns were not always placed at sufficient angles to preclude fore-and-aft movement.

(e) 1/4-ton trucks loaded abreast were not wired together and did not have 2- by 4-inch (5- by 10-centimeter) pieces of lumber placed between the adjacent wheels to prevent chafing (fig 6-12).

Figure 6-12. 1/4-ton trucks loaded abreast.

(3) MTMC representatives advised the loading teams to correct loading rule violations whenever they were noted. In addition, the following suggestions were offered but not accepted.

(a) A recent change in the AAR loading rules eliminates the need for chocking and bracing on chain tiedown cars. The division elected, however, to chock and brace their equipment in addition to using the chain tiedown (fig 6-13).

(b) Eight empty 1/4-ton trailers should have been banded together for shipment to conserve railcar and ship stowage space.

Figure 6-13. Chocking and bracing being applied on a chain tiedown flatcar.

(c) Vehicle steering wheels should not be chained and locked. All vehicles had their steering wheels chained and locked with the keys in the possession of the train guard. (Note: This procedure delays offloading at the POE.)

(4) The flooring of railcars provided by the Union Pacific was in marginal condition; flooring was missing (fig 6-14); wood was rotten and weak in places (fig 6-15) and full of nails (fig 6-16). Gondola cars were littered with debris (fig 6-17). The DODX guard car was, conversely, in good condition.

(5) The CONEXs used were in poor condition. The metal was rusted and bent, and the doors would not close properly. This condition required that all CONEXs be banded shut.

Figure 6-14. Condition of flatcar flooring.

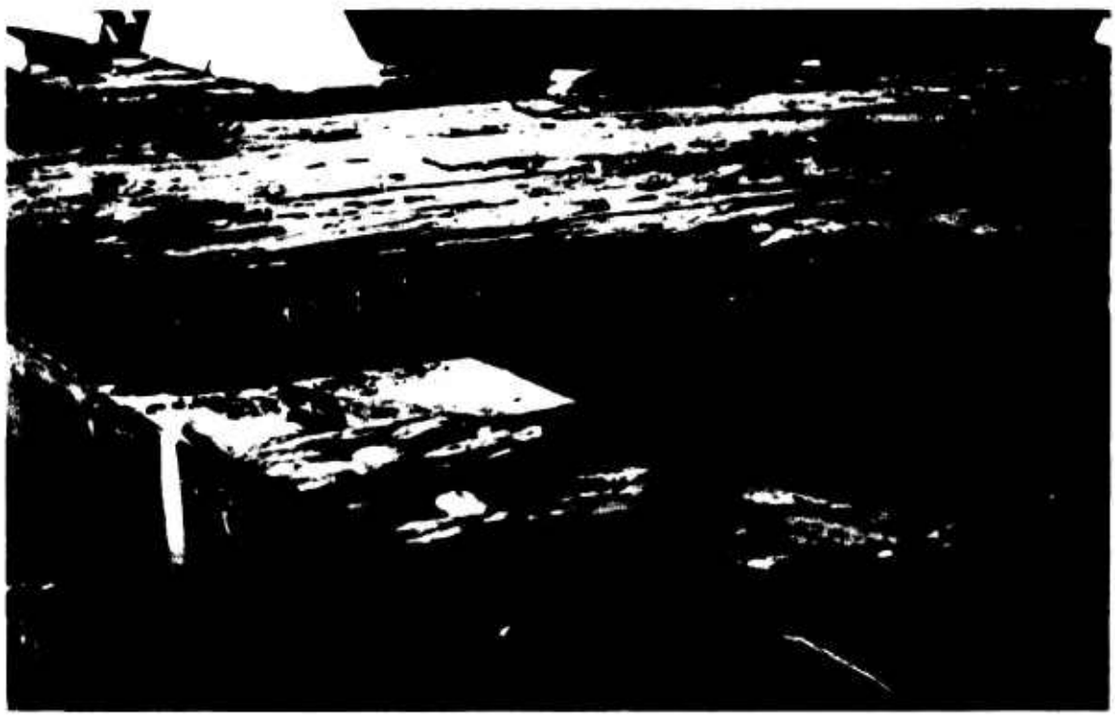

Figure 6-15. Condition of flatcar flooring.

Figure 6-16. Condition of flatcar flooring.

Figure 6-17. Condition of gondola cars.

3. Fort Carson installation outloading.

a. Installation survey.

(1) General. Prior to REFORGER 77, MTMC conducted a rail outloading capability study[2/] of Fort Carson, Colorado. The primary finding of the survey is that Fort Carson can support relatively large-scale rail operations.

(2) Rail facility description. The rail system at Fort Carson is depicted in figure 6-18. Details and outloading capabilities can be found in MTMC Report TE 77-27.

b. Rail outloading assistance.

(1) Rail training assistance.

(a) MTMC personnel visited Fort Carson from 5 through 8 July 1977 and 21 July through 5 August 1977 to provide rail outloading training and technical assistance. MTMC personnel participated in the presentation of a 1-hour class on the use of special-purpose railcars and observed the practice loading of two units.

(b) At the end of the training visit, it could be said that Fort Carson personnel were familiar with rail equipment and loading materials but lacked sufficient knowledge to load equipment efficiently in accordance with the AAR loading rules. Training observed was inadequate.

(2) Technical loading assistance. Loading began on 21 July 1977 when the first railcars arrived. All cars furnished by the Atchison, Topeka, and Santa Fe (ATSF) were in excellent condition as were DODX heavy-hauler flatcars. Bilevel care provided were short of tiedown devices, but otherwise in excellent condition. Later investigation determined that the bilevel cars had been used in special service, and that additional tie-down devices could not be located in sufficient time for the move. The problem of insufficient tiedowns was solved by using number 8 gauge wire in lieu of chain tiedowns (fig 6-19). MTMC personnel objected to this practice, which violated the AAR loading rules; however, the Atchison, Topeka, and Santa Fe Railroad inspector and Fort Carson officials jointly agreed to the use of wire, and the cars were so loaded.

[2/] MTMC Report TE 77-27, Rail Outloading Capability Study, Fort Carson, Colorado, MTMCTEA, Newport News, VA 23606, July 1977.

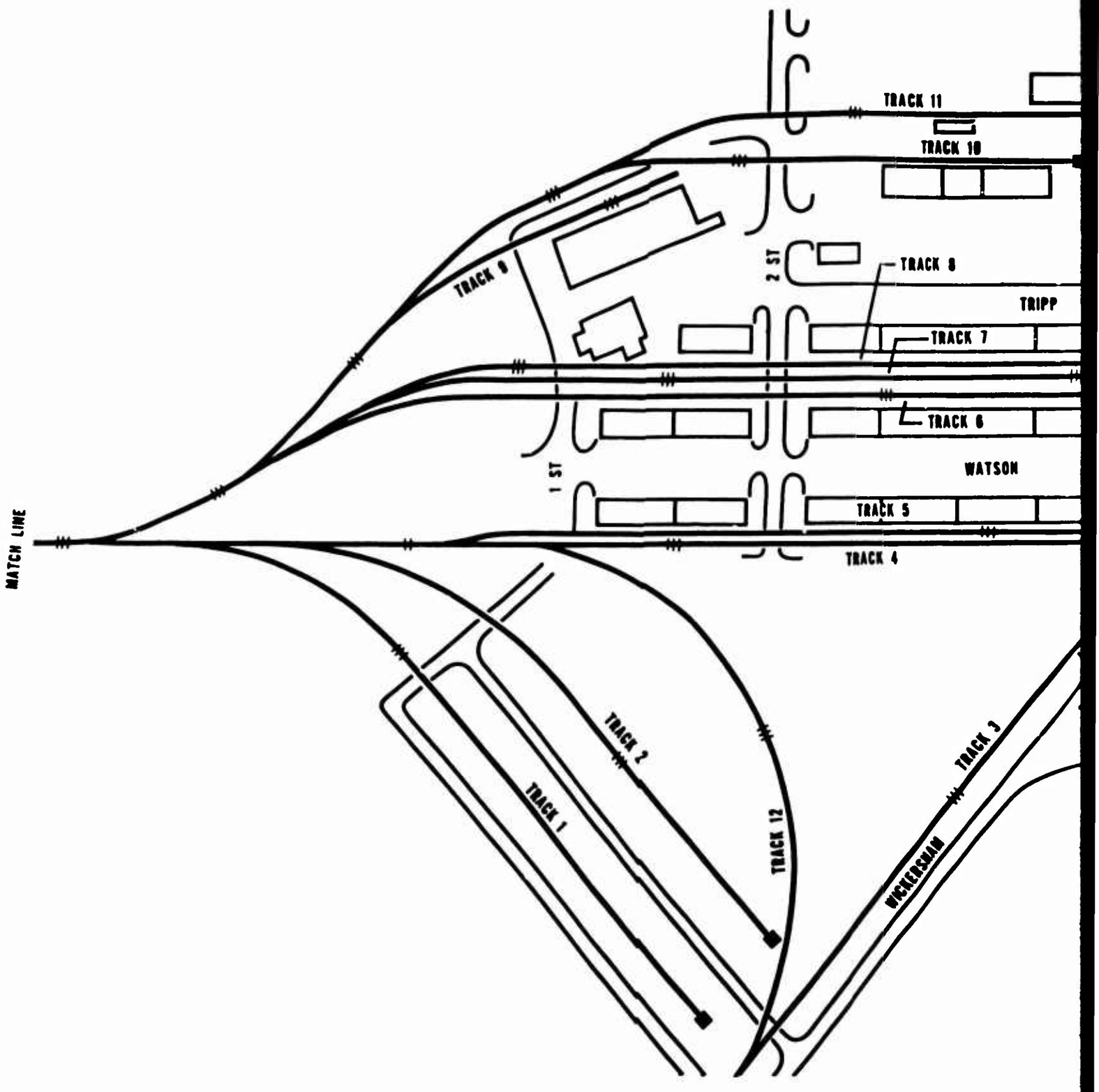

Figure 6-18. Fort Carson rail system.

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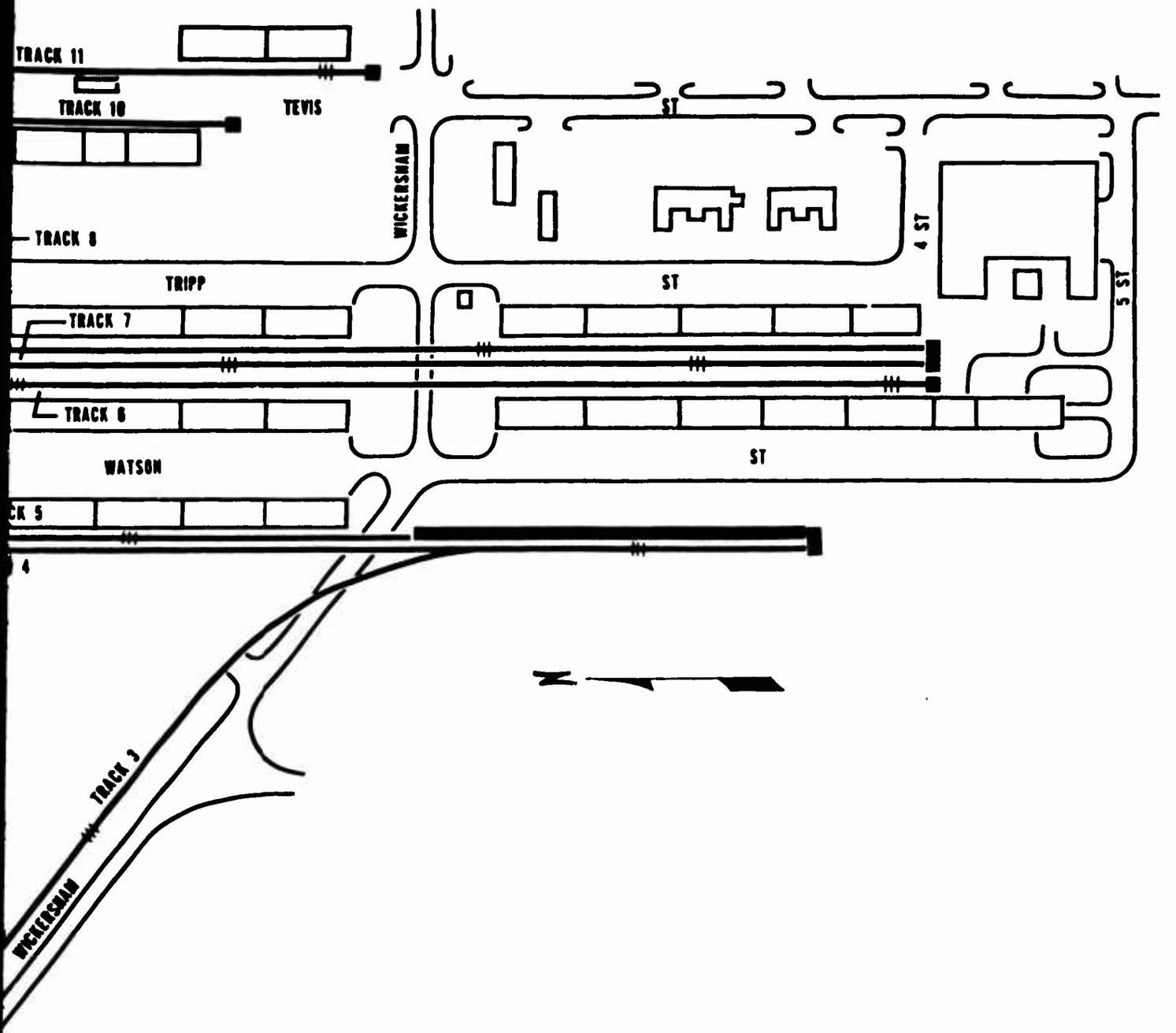
TRACK 11
TRACK 10
TEVIS
ST
WICKERSHAM
TRACK 8
4 ST
5 ST
TRIPP
ST
TRACK 7
TRACK 6
WATSON
ST
CK 5
4
TRACK 3
WICKERSHAM

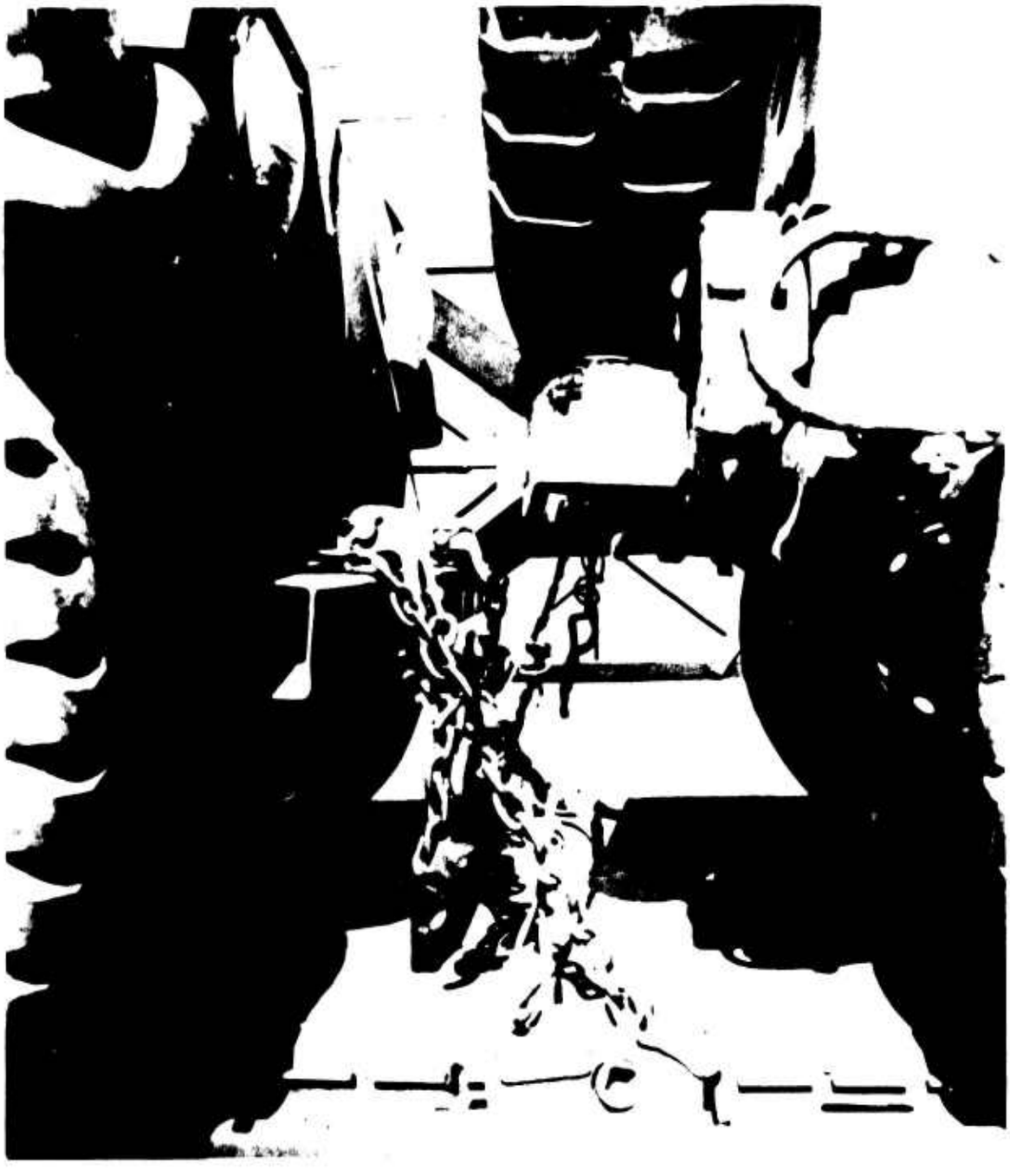

Figure 6-19. Use of wire tiedowns.

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c. Rail operations.

(1) The loading of the cars for the first train was slow and inefficient. Misapplication of chains, wire rope, and blocking and bracing materials was apparent at all loading sites (figs 6-20 through 6-22).

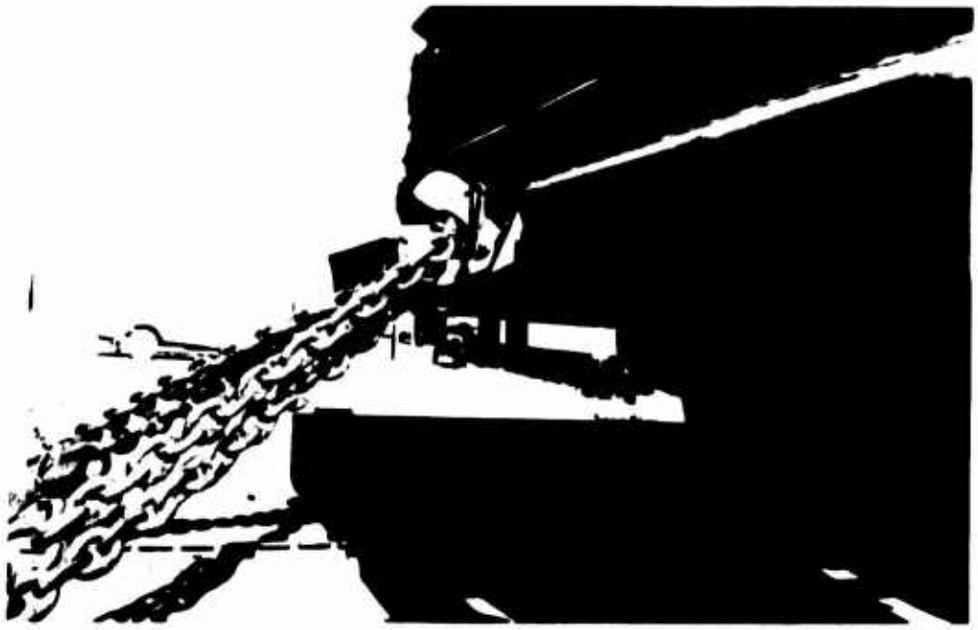

Figure 6-20. Rear tiedown on M-880 pintle.

Figure 6-21. Improper M-60 road wheel chocking.

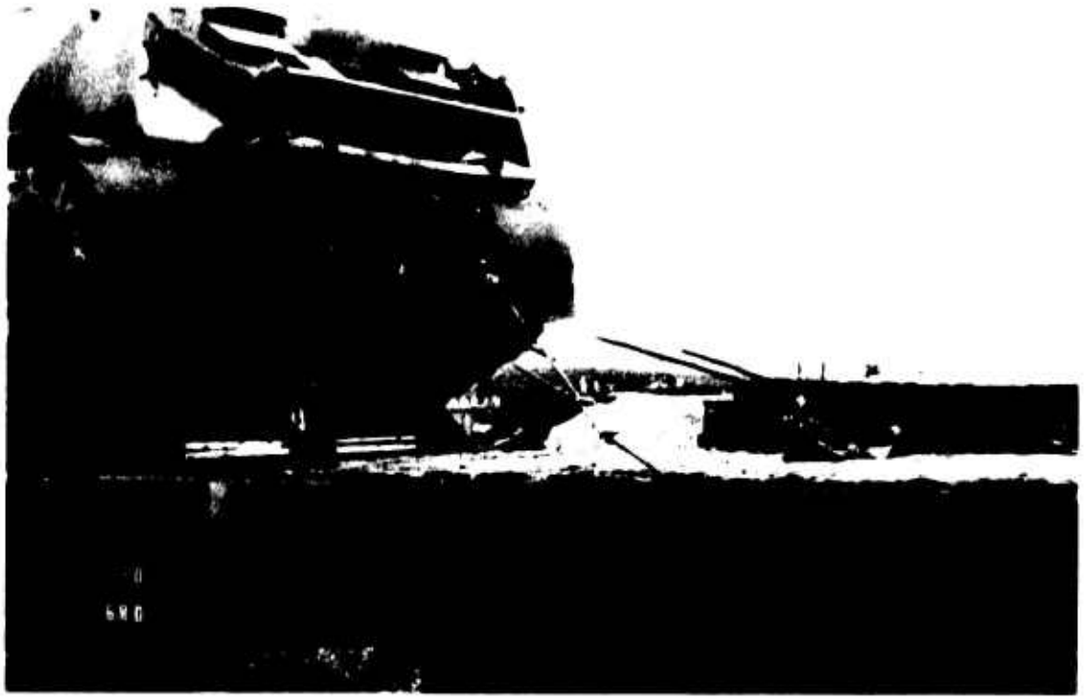

Figure 6-22. Improper M-88 wire rope tiedown.

(2) Practices and standards prescribed by the AAR, the servicing railroad, and Fort Carson were not consistently applied, causing duplication and confusion in the loading and tiedown of equipment (figs 6-23 through 6-25).

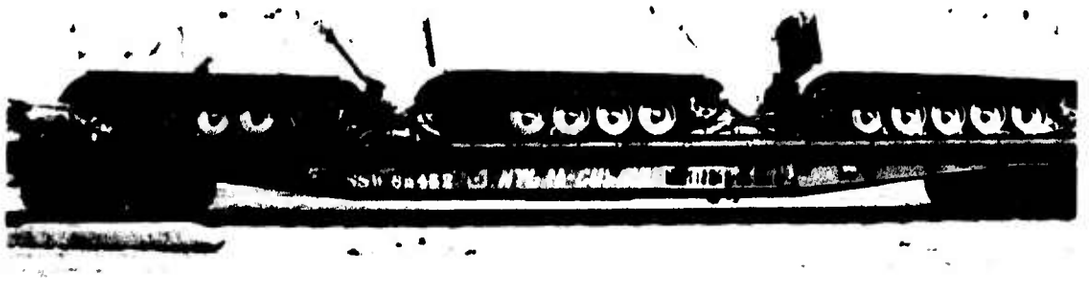

Figure 6-23. M-113 properly tied down.

Figure 6-24. M-113 excess tiedown.

Figure 6-25. M-113 nonconformance with AAR rules.

(3) Lack of supervisory knowledge at the lowest unit levels on the application of tiedown devices was evident; however, learning progressed rapidly. The 4th Division (M) (-) decision to keep the same loading team at a site throughout the loading cycle greatly improved the loading process. Proficiency increased to the point that the last train was loaded and tied down in an expeditious manner.

(4) Varying requirements by servicing railroad inspectors present during outloading resulted in minor adjustments to tiedown procedures. These adjustments did not affect significantly the efficiency of the loading process.

(5) Vehicles in most cases were overprotected. Taping and padding of headlights, boxing of windshields, and other overprotective measures were unnecessary (figs 6-26 through 6-28). (AR 220-10 and FORSCOM Reg 55-1.)

Figure 6-26. M-886 windows and headlights protected.

(6) Improper banding of stacked equipment--that is, 1/4-ton trailers and 12-ton S&P trailers (1/2-inch and 5/8-inch banding, respectively)--on train number 1 caused some rebanding of the trailers during transit. Corrective measures were taken, and no recurrence of the problem surfaced on subsequent trains.

Figure 6-27. M-880 windshield and headlights protected.

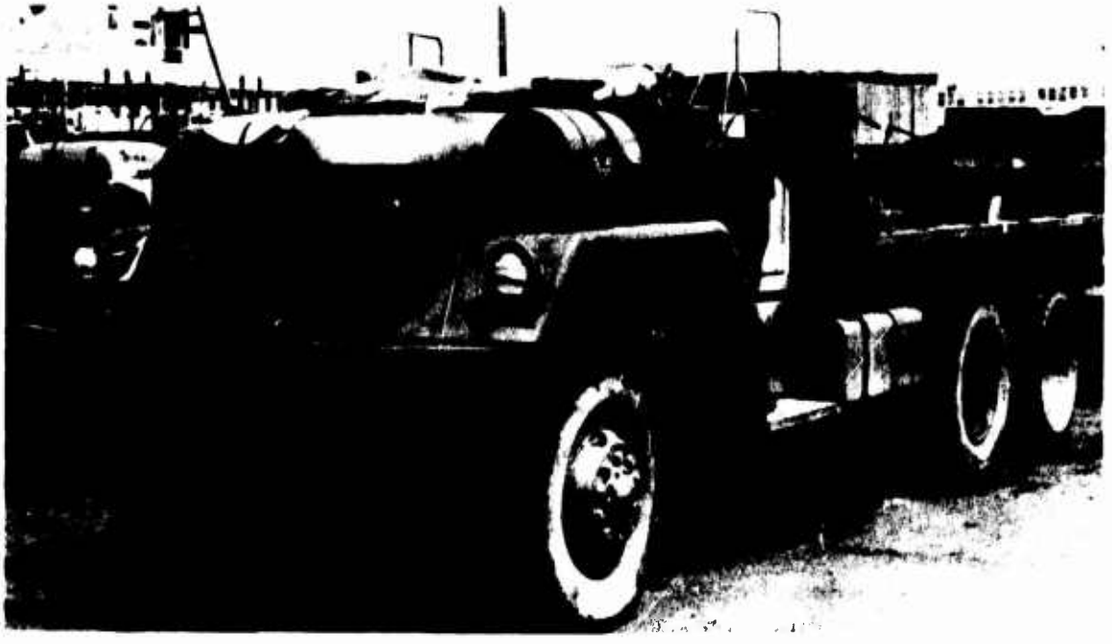

Figure 6-28. M-813 windshield and headlights protected.

(7) Although MTMC personnel at Fort Carson pointed out specific errors in loading procedures (that is, improper banding of trailers, incorrect application of tiedown devices, and so forth), the errors were corrected only if the servicing railroad also agreed. The attitude of the Fort Carson personnel was simply that if the servicing railroad accepted the train, further corrections were not necessary. AAR loading rules should be uniformly applied.

4. Railway equipment.

a. The railcars furnished by the ATSF were in excellent condition. Many were new (fig 6-29).

Figure 6-29. Railcar condition.

b. Cars furnished by the Denver and Rio Grande Western (DRGW) were in fair to poor condition. Some cars furnished by the DRGW lacked sufficient tiedowns, and the decks were in poor condition.

c. Some special-purpose cars were cumbersome to load; specifically, 89-foot chain-tiedown cars required the installation of additional tiedown fittings and the substitution of 5/8-inch cable for chains (figs 6-30 and 6-31). The brake handle on 89-foot flatcars prevented the loading of M-113 and M-577 vehicles without first removing the track shroud on both sides.

Figure 6-30. Welded deck railcar tiedown.

Figure 6-31. Wire rope substituted on chain tiedown railcar.

5. Summary.

a. The REFORGER 77 unit port call message was much improved over REFORGER 76. Coordination between the divisions and MTMCEA was excellent.

b. Rail outloading training must be emphasized. Offers by MTMC to conduct training 90 days in advance of loadout were not accepted by Fort Riley. Limited training was provided at Fort Carson.

c. The poor condition of railcar flooring and tiedowns suggests that more stringent railcar acceptance criteria be applied by the ITOs of outloading installations.

d. The poor condition of the CONEXs and subsequent transportability problems of the CONEXs affirm the MTMC position that MILVANs should be used vice CONEXs for future unit deployment exercises.

e. MTMC field representatives lack specific authority to enforce AAR loading rules when the servicing railroad accepts the shipper tiedown procedures or when the unit employs unnecessary, costly loading procedures (such as using blocking on chain-tiedown cars).

SECTION VII

CONUS LINE-HAUL TO SPOE

1. General.

a. Tasked with the responsibility of controlling and coordinating the movement of REFORGER 77 cargo and equipment from origin to MOTBY, MTMCEA developed a movement plan using rail, highway, and self-deployment of helicopters. Rail was the predominant mode of transport. The plan for CONUS line-haul to SPOE involved the use of 5 special trains, (4 from Fort Carson and 1 from Fort Riley) and 35 commercial truckloads from Forts Hood, Bliss, Campbell, and Jackson. This plan was briefed at the USREDCOM REFORGER 77 planning conference held at MacDill Air Force Base, Florida, on 26 to 28 April 1977.

b. Rail route selection involved the identification of 27 route options. The route analysis identified 12 of these routes that met the optimal criteria in terms of service and time. The final selection was made of two routes from Fort Carson to MOTBY with distances of 2,155 miles and 2,214 miles (3,470 and 3,565 kilometers), and one route from Fort Riley to MOTBY, a distance of 1,589 miles (2,558 kilometers). The routes chosen involved the use of several interfacing rail carriers. These were: Denver and Rio Grande Western; Atchison, Topeka, and Santa Fe; Union Pacific; Chicago and Northwestern; Consolidated Rail Corporation; Rock Island; and Norfolk and Western.

c. On 24 and 25 May 1977, MTMCEA hosted a CONUS rail planning conference to finalize the CONUS rail move and to provide detailed profiles of the moves from origins to destination. Rail schedules were finalized, and early July 1977 was established as the period for the issuance of the unit port call message.

2. Rail communications net.

a. Rail movement status charts were maintained at the MTMCEA REFORGER operations center to facilitate control and monitoring of the progress of the move from Forts Carson and Riley to MOTBY. The communications net was opened on 25 July 1977, starting with the railcar loading operations at Fort Carson and Fort Riley, and continued until the last train arrived at MOTBY on 9 August 1977. MTMC representatives were present at both loading sites to report all information pertaining to the loadout of railcars and departure of trains.

b. Approximately 1-1/2 hours after the departure of the first train from Fort Carson, Consolidated Rail Corporation (CONRAIL) recommended that the CONRAIL portion of the routing be changed between Chicago and Bayonne, due to congestion in the Buffalo area. The original route was; Chicago, Elkhart, Toledo, Cleveland, Buffalo, Sayre, Allentown, and Bayonne. As changed, the route was Chicago, Logansport, Union City, Marion, Hornwell, Sayre, Allentown, and Bayonne; the connecting railroad and MTMCEA concurred in the change. CONUS rail line-haul operations for the deployment phase of REFORGER 77 were not affected by the change.

c. A communications net was established via telephone from the field reporting sites to the REFORGER 77 MTMCEA operations center at MOTBY. Routine information, such as train locations, was received at MOTBY as each train passed through one of the checkpoints (figs 7-1 and 7-2) and was included in situation reports (SITREP) to HQ MTMC. When a train left Fort Carson or Fort Riley, the rail carrier became responsible for advising the MTMCEA operations center of train location, progress, and problems. The actual flow of communications was excellent and according to plan. It provided the operations center with timely information on all phases of the CONUS rail move. Particularly effective was the establishment of a single point of contact with each of the participating railroads for all information pertaining to train progress.

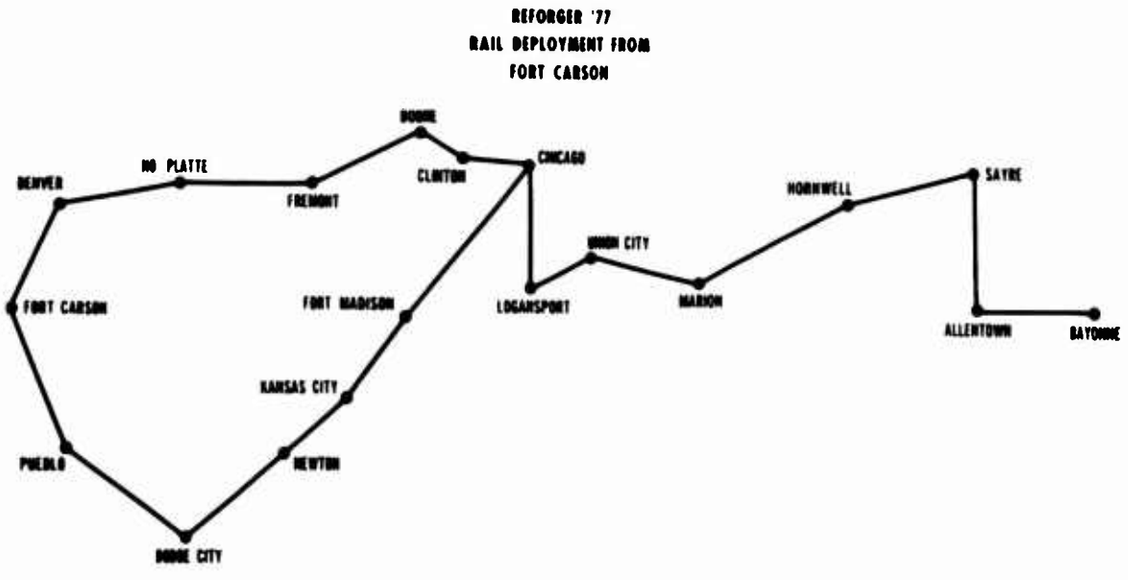

Figure 7-1. REFORGER 77 rail deployment from Fort Carson.

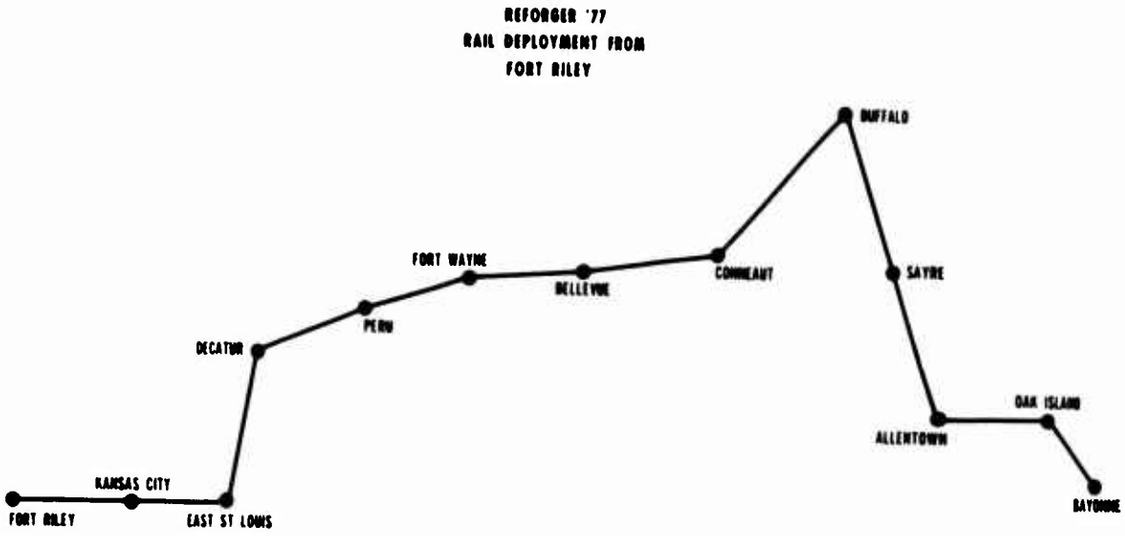

Figure 7-2. REFORGER 77 rail deployment from Fort Riley.

3. Rail operations.

a. All five special trains that transported REFORGER 77 cargo and equipment from Forts Carson and Riley to MOTBY arrived within the planned transit time except train number 5, originating at Fort Carson; it arrived at MOTBY 14 hours late (table 7-1). The delayed arrival of train number 5 was caused in part by design. MTMCEA had the following options available:

TABLE 7-1
TRAIN TRANSIT TIMES

Train No.	Origin	Scheduled Transit Time (Hours)	Actual Transit Time (Hours)
1	Fort Carson	100:40	94:40
2	Fort Carson	100:40	94:45
3	Fort Riley	86:00	72:15
4	Fort Carson	103:10	103:25
5	Fort Carson	103:10	117:20

(1) Use train number 5 as the cleanup train for all bad order cars from the previous trains originating from Fort Carson, and have it wait for the repair of any bad order cars that occurred during its transit.

(2) Have a non-REFORGER train routinely pick up any bad order cars that had been set aside from train number 5 or from previous trains that had not been repaired, and deliver them to MOTBY.

(3) Have REFORGER 77 cargo and equipment that could not be transported by train number 5 transferred from set-aside railcars to commercial trucks. MTMCEA selected option (1). The 14-hour delay of train number 5 was closely monitored, work schedules were adjusted accordingly, and the delay had no adverse impact on the SPOE operations.

b. The railcar breakout for REFORGER 77 consisted of 78 Department of Defense-owned railcars (DODX), including 5 guard cars and 270 commercial railcars. A breakout of number and types of railcars used is at table 7-2. The total weight moved by railcars was 23,174,494 pounds (10,511,950 kilograms).

TABLE 7-2
DEPLOYMENT RAILCAR BREAKOUT

Train Number	Boxcars	DODX	Chain Tiedowns	Gondolas	Flatcars	Bilevels	Total Cars on Train
1	1	17	27	19	0	6	72
2	0	17	50	0	0	7	76
3	0	0	23	8	24	0	56
4	0	17	50	0	0	6	73
5	0	19	43	0	0	6	68

Note: Plus five DODX guard cars--one on each train.

c. The general maintenance of the 75 DODX railcars used for the deployment phase of REFORGER 77 was good. Three DODX flatcars, however, became bad order cars en route (one car twice) requiring that they be set aside, and guard car G-13 on the first train had no air conditioning from Pueblo, Colorado, to MOTBY. This caused some discomfort for the guard detail. Guard car G-56 on the fourth train required generator repairs en route with minimal time lost. Three commercial railcars were also set aside en route in order to resecure loads.

d. The most significant en route event occurred 31 July 1977 and involved a DODX flatcar (loaded with two M-60 tanks) that was set aside at Coal City, Illinois, from train number 2. While the car was awaiting further movement to Corwith, Illinois, for repair, one M-60 tank was broken into. A subsequent visual inspection at Blue Island, Illinois, by a member of the guard detail on train number 4, revealed that compartments below the gun chamber had been opened and contents within the compartments strewn over the deck. An inventory sheet of contents was not available; however, subsequent inspection upon arrival at MOTBY revealed

that all periscopes and the radio were intact. A serious incident report (SIR) was issued by HQ, MTMCEA, soon after the preliminary details of the break-in became known. This lapse of security was taken up with the ATSF Railroad by HQ, MTMC, and when the railroad's security responsibility was reiterated, no other incidents of this nature occurred during the exercise.

4. Motor carrier communications net.

a. The communications net was established via telephone. Drivers were to follow a predesignated route (fig 7-3) and notify their dispatchers at least twice daily of their locations. The dispatchers, in turn, notified the MTMCEA REFORGER operations center. This notification generally occurred at 1530 and 2130 hours daily.

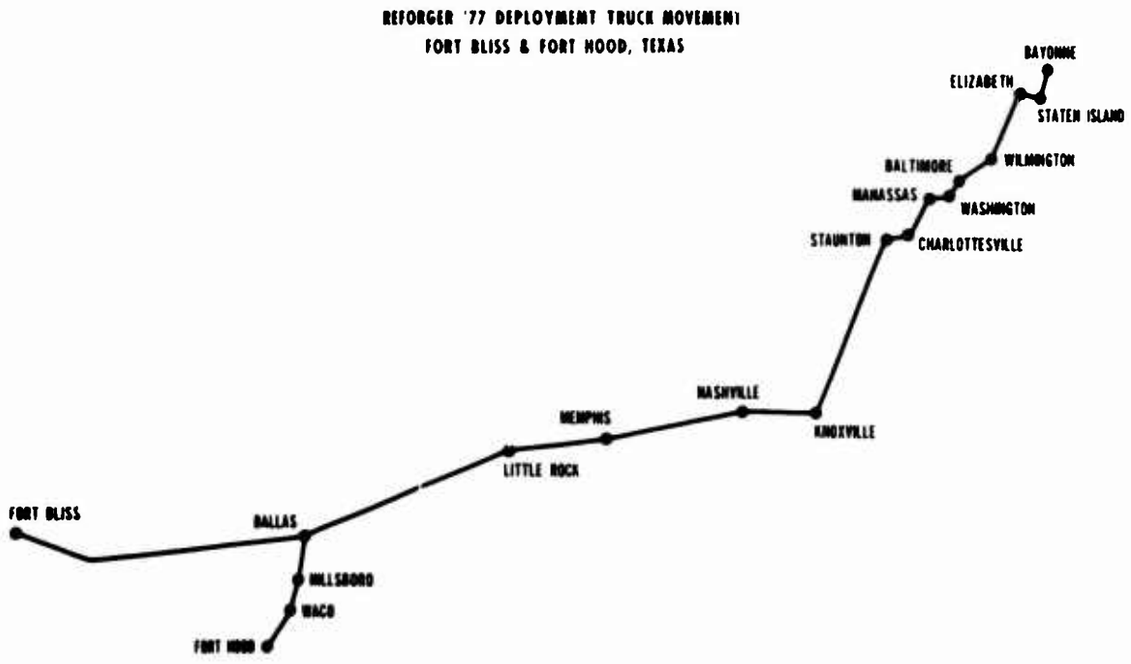

Figure 7-3. CONUS predesignated highway movement routes.

b. Status charts were maintained at the REFORGER operations center to control and monitor the truck movements en route. Although well planned, the communications procedures were not entirely satisfactory. The most significant problems were:

(1) The tracking of truck movements for the first 2 days of motor freight operation (27 and 28 July 1977) was totally unsatisfactory. Both days the REFORGER operations center had no knowledge of truck

locations, as the motor carriers failed to fulfill their notification responsibilities. MTMCEA initiated appropriate action (contacted trucking company main offices) and resolved the reporting problem.

(2) Actual control of highway movements may not be absolutely necessary, except when sensitive cargo is being shipped. Although a specific route had been designated, several drivers did not follow that prescribed route.

5. Motor freight operations.

a. The REFORGER 77 motor freight operation involved the use of 35 commercial tractor-trailers to transport REFORGER 77 cargo and equipment from Fort Bliss (21 loads), Fort Hood (11 loads), Fort Campbell (2 loads), and Fort Jackson (1 load) to MOTBY.

b. The primary trucking firm for the CONUS highway line-haul was Leonard Brothers Trucking Company, Inc., which furnished 28 of the required 35 trucks. For this reason, MTMCEA maintained direct contact with the firm's main headquarters in Florida.

c. The first highway movements commenced on 27 July 1977 and were completed on 8 August 1977. No major en route problems were encountered, and all vehicles arrived according to schedule, with the exception of one truck from Fort Campbell, Kentucky, which arrived 3 days late (8 August 1977) due to the truck driver's decision not to deliver cargo on the weekend. The late arrival of the one truck had no impact on ship-loading operations.

6. Helicopter self-deployment. Three helicopters self-deployed from Fort Hood, Texas, to the Military Ocean Terminal, Bayonne, New Jersey. Upon arrival at the MOTBY landing site, ground-handling wheels were installed, and the helicopters were towed into Building 15 for temporary staging. The self-deployment was accomplished, as planned, without incident.

7. Summary.

a. CONUS line-haul from the six installations to Bayonne was successfully accomplished in a professional manner with REFORGER 77 cargo arriving with minimal damage.

b. Detailed rail and highway planning, along with extensive coordination between MTMCEA and the deploying units, contributed significantly to the smooth flow of REFORGER 77 cargo and equipment into the port of embarkation.

c. Although the monitoring of the highway movement progress requires some additional attention, it was significantly improved over REFORGER 76. For future exercises, consideration should be given to requiring location reports only for sensitive shipments and, for all other vehicles only departure times, delays en route, and arrival times.

SECTION VIII

CONUS SPOE OPERATIONS (RECEIPT, STAGING, AND LOADING)

1. General.

a. Exercise REFORGER 77 utilized the Military Ocean Terminal, Bayonne, New Jersey, to conduct all aspects of cargo receipt, segregation, staging, and shiploading of REFORGER 77 cargo and equipment for the CONUS portion of the deployment phase. Specific areas were identified at MOTBY for ship berths, equipment staging, helicopter landing sites, and an operations center (fig 8-1).

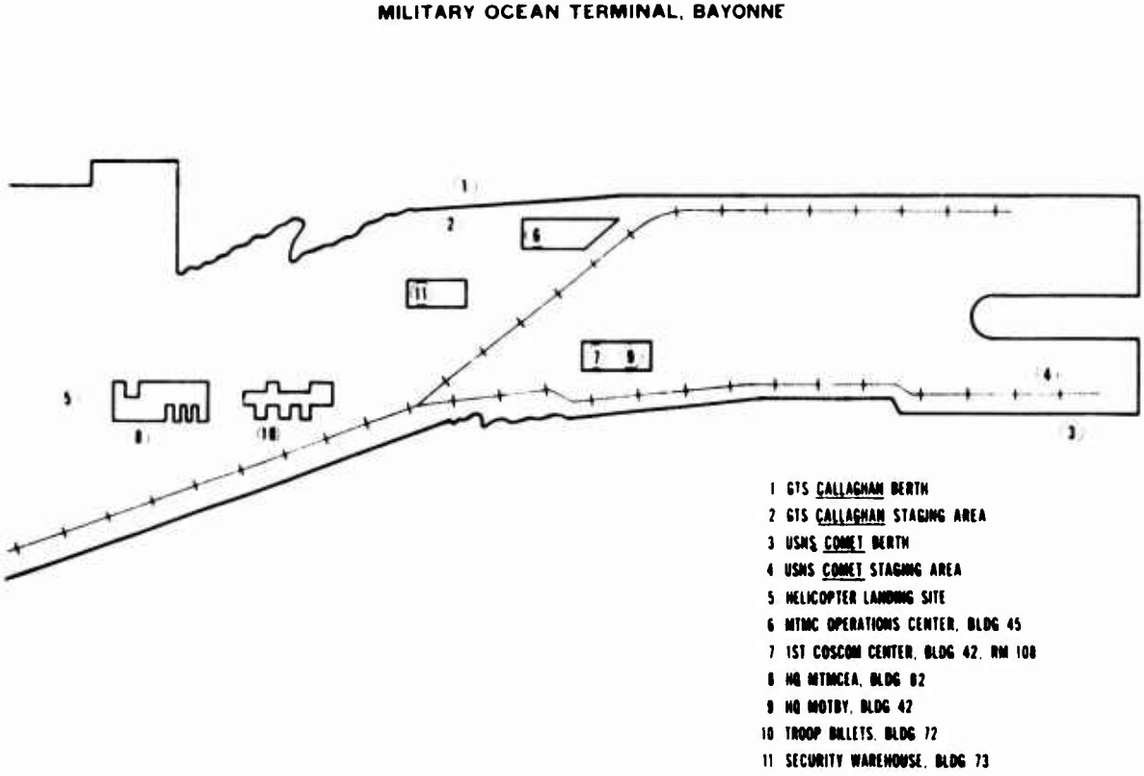

Figure 8-1. MOTBY designated REFORGER 77 sites.

b. As the REFORGER 77 exercise director for all CONUS surface transportation and port operations, the Commander, MTMCEA, developed the REFORGER task organization (fig 8-2) and established a MTMCEA REFORGER operations center on 26 July 1977. This provided the necessary command and control to insure a smooth operation and to provide interface with other exercise elements.

REFORGER TASK ORGANIZATION (MTMCEA)

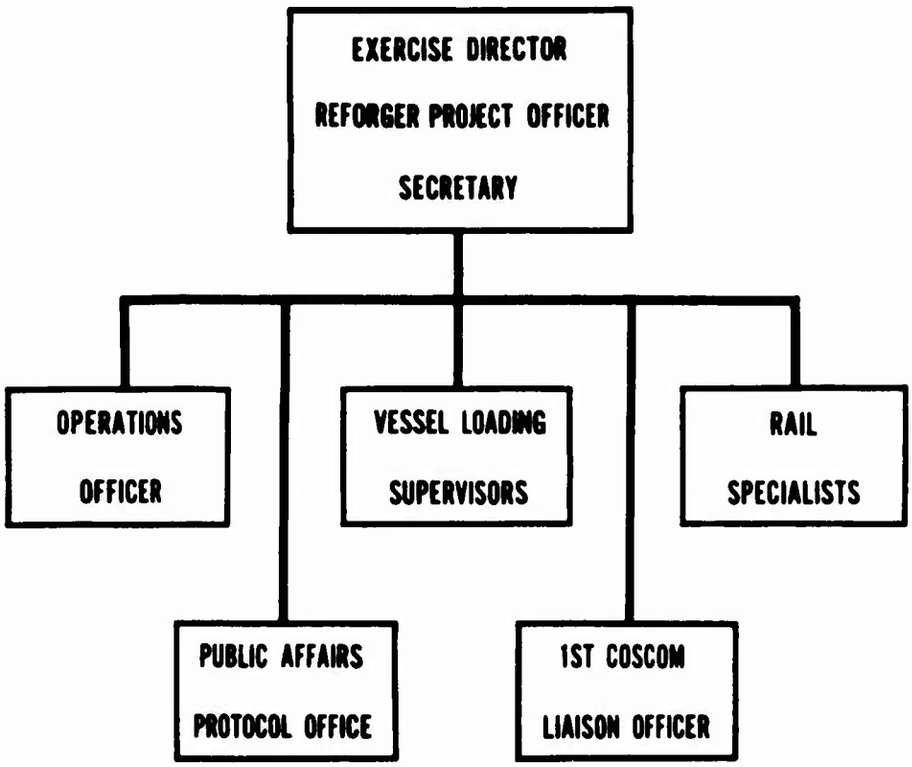

Figure 8-2. REFORGER 77 task organization.

c. The relationship between MTMCEA and 1st COSCOM, which was designated by FORSCOM as the port support activity, was primarily one of liaison. The Commander, port support activity (1st Corps Support Command), was responsible for providing maintenance contact teams, security of REFORGER cargo, and exercising command and control of exercise participants. To provide continuous coordination, a 1st COSCOM liaison officer was present in the MTMCEA REFORGER operations center.

d. Commencing 31 July 1977 at 0930 hours daily, the MTMCEA REFORGER project officer conducted an operations meeting. The meeting as attended by the MTMCEA exercise director and representatives of MOTBY, MSC, 1st COSCOM, MP Customs, and divisional representatives (fig 8-3). Items covered during the operations meetings included dissemination of information about the operation, visitor schedules, a review of the daily work schedule, and discussions of identified or potential problem areas.

Figure 8-3. Daily operations meeting.

2. Cargo receipt and staging operations.

a. Upon arrival of the cargo and equipment at MOTBY, railcars and commercial trucks were segregated by ship and spotted in the vicinity of the appropriate staging area (GTS Callaghan or SS Washington/USNS Comet staging area) for offload and staging.

b. REFORGER 77 was conducted as a peacetime exercise in which safety and equipment handling care were the predominant considerations for minimizing damage and insuring personal safety. For these reasons, the arrivals of trains at MOTBY were scheduled so as to allow sufficient time to completely offload each train prior to the arrival of the next one.

c. The arrival and offload times at MOTBY for trains and commercial trucks carrying REFORGER cargo and equipment are shown in tables 8-1 and 8-2.

d. The three UH-1H helicopters arrived on MOTBY at 1840 hours 7 August 1977. The planned landing site for these helicopters was moved from the quay apron at the SS Washington/USNS Comet staging area to a baseball field adjacent to the MTMCEA headquarters building. This change of landing sites was made solely to insure safe operations. The UH-1Hs were towed on ground-handling wheels from the landing site to Building 15A for secure storage until they were loaded aboard the USNS Comet.

TABLE 8-1
TRAIN ARRIVALS

Train No.	Origin	No. of Cars	Arrival Time MOTBY	Offload Completion Time
1	Fort Carson	68	31 Jul 77/1410 hours	1 Aug 77/1830 hours
2	Fort Carson	79	2 Aug 77/1740 hours	3 Aug 77/1900 hours
3	Fort Riley	56	4 Aug 77/1130 hours	5 Aug 77/1630 hours
4	Fort Carson	74	7 Aug 77/0125 hours	8 Aug 77/1930 hours
5	Fort Carson	71	9 Aug 77/1350 hours	10 Aug 77/1600 hours

TABLE 8-2
TRUCK ARRIVALS

Trl No.	Origin	Arrived MOTBY
415	Fort Hood	29 Jul 77/0930 hours
6601	Fort Hood	3 Aug 77/0900 hours
374	Fort Hood	4 Aug 77/1030 hours
331	Fort Hood	5 Aug 77/0930 hours
414	Fort Hood	1 Aug 77/0800 hours
258	Fort Hood	1 Aug 77/0800 hours
119	Fort Hood	1 Aug 77/1000 hours
120	Fort Hood	1 Aug 77/1000 hours
4620	Fort Hood	1 Aug 77/1100 hours
370	Fort Hood	1 Aug 77/1530 hours
311881	Fort Hood	2 Aug 77/1030 hours
161	Fort Bliss	5 Aug 77/1950 hours
366	Fort Bliss	4 Aug 77/1255 hours
303	Fort Bliss	5 Aug 77/1055 hours
298	Fort Bliss	4 Aug 77/0750 hours
421	Fort Bliss	4 Aug 77/1030 hours
132	Fort Bliss	5 Aug 77/1355 hours
411	Fort Bliss	5 Aug 77/1625 hours
431	Fort Bliss	4 Aug 77/0720 hours
356	Fort Bliss	4 Aug 77/0750 hours
422	Fort Bliss	4 Aug 77/0720 hours
2074	Fort Bliss	3 Aug 77/1700 hours
1361	Fort Bliss	4 Aug 77/1325 hours
383	Fort Bliss	3 Aug 77/1630 hours
350	Fort Bliss	2 Aug 77/1530 hours
322	Fort Bliss	3 Aug 77/0900 hours
325	Fort Bliss	3 Aug 77/0900 hours
5517	Fort Bliss	4 Aug 77/1030 hours
5007	Fort Bliss	1 Aug 77/1330 hours
326	Fort Bliss	3 Aug 77/0900 hours
301	Fort Bliss	2 Aug 77/1445 hours
382	Fort Bliss	3 Aug 77/0900 hours
1	Fort Jackson	4 Aug 77/1255 hours
3181	Fort Campbell	5 Aug 77/1550 hours
3259	Fort Campbell	8 Aug 77/1545 hours

Note: All commercial trucks carrying REFORGER 77 cargo and equipment were offloaded at the appropriate staging area within 2 hours after arrival at MOTBY.

e. Minimum disassembly of the three helicopters, consisting of removal of the synchronized elevators and one tail rotor blade, was accomplished at the storage site. This facilitated loading and stowing the aircraft within the hatch square of number 4 hold on the USNS Comet.

f. Equipment was offloaded from line-haul conveyances by stevedores of the Universal Stevedoring Company.

(1) All tracked vehicles were lifted off railcars using a mobile crane (figs 8-4 and 8-5). The lift-off operation, which is significantly slower than a drive-off operation, was required because a reinforced end-loading ramp capable of supporting the M-60 and M-88 was not available.

Figure 8-4. M-113 rail offload.

(2) CONEX containers, communications shelters, and other non-wheel-mounted cargo was offloaded from gondola railcars using a mobile crane (fig 8-6).

(3) Wheeled vehicles were driven off the flatcars using a portable end ramp and, in most cases, one railcar spanner which required forklift support (fig 8-7); however, additional railcar spanners were available.

Figure 8-5. M-60 rail offload.

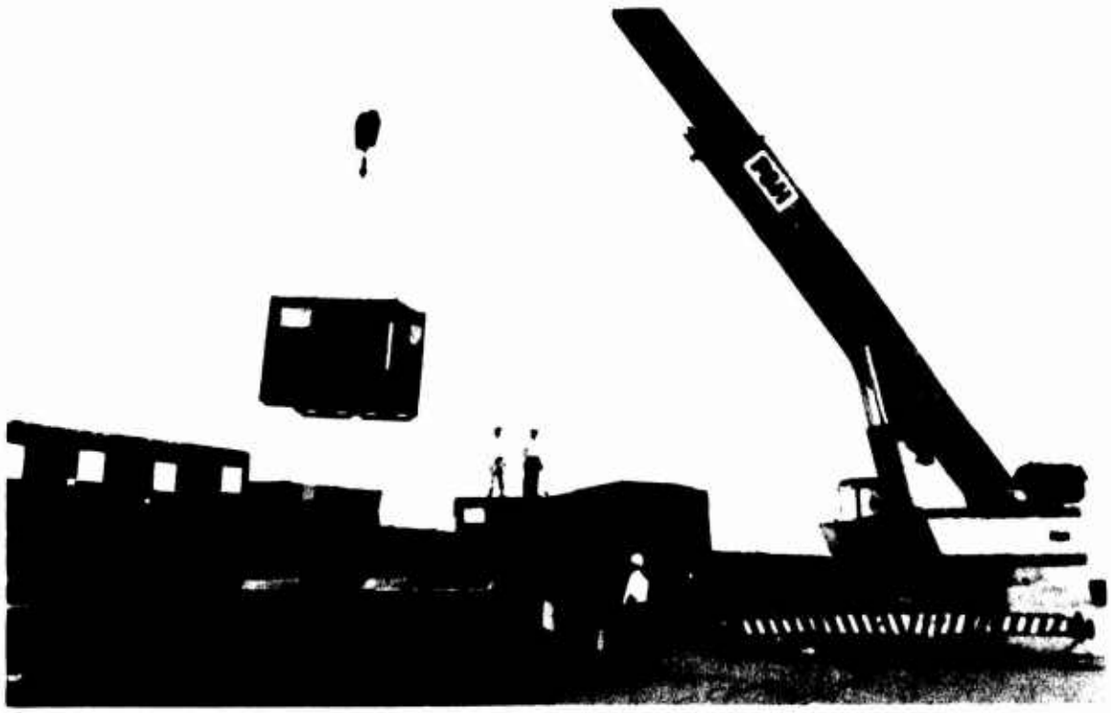

Figure 8-6. CONEX rail offload.

Figure 8-7. Vehicular drive-off

(4) The vehicles loaded on 89-foot bilevel railcars were offloaded using a specially designed end ramp (fig 8-8). Due to a restrictive curve at the approach to the USNS Comet staging area, the 89-foot bilevels were offloaded approximately one-half mile from the USNS Comet staging area and were lined up in a temporary holding area for subsequent movement to the staging area.

Figure 8-8. Bilevel drive-off.

g. The 1st COSCOM provided one maintenance contact team within the port support package; however, the equipment for REFORGER 77 arrived at MOTBY in excellent mechanical condition. The contact team provided assistance during rail offloading, staging, and shiploading by insuring that all equipment was operational. In at least three instances the team had to "slave" vehicles to accomplish rail offloading.

h. Staging was accomplished in compliance with the established staging plans. Equipment, after being offloaded from railcars, was lined up by type of equipment (figs 8-9 and 8-10). Special consideration was given to the varying heights of similar equipment, which influenced stowage location aboard ship. (The staging by type of equipment was a "lesson learned" during REFORGER 76, when equipment was marked and staged by stow location aboard ship, a procedure which proved very time consuming.) The staging method used during REFORGER 77 proved to be significantly less time consuming yet provided the necessary equipment segregation for efficient shiploading operations.

Figure 8-9. Staging at GTS Callaghan site.

Figure 8-10. Staging at USNS Comet site.

i. The proficiency and cooperation exhibited by the stevedores during all phases of the REFORGER 77 port operations deployment phase was outstanding.

j. Damage to REFORGER cargo and equipment during movement, receipt at MOTBY, and staging was minimal. Damage consisted primarily of minor dents and scratches. A few vehicles arrived with the rear bumperettes torn off due to improper tiedown procedures (fig 8-11). Six tanks arrived without gun tube travel locks; however, there was no apparent damage.

Figure 8-11. Improper tiedowns.

3. Problem areas. While the receipt and staging of REFORGER 77 cargo and equipment was conducted efficiently, problems arose that were usually the result of improper rail loading and documentation procedures. The most important of these are enumerated below:

a. Senitive cargo (weapons in CONEXs on gondola railcars) was not properly identified on the GBLs, as required by change 27, AR 55-355, dated 27 April 1977, and MTE-INS message dated 15 October 1976. This caused the cargo to be spotted inadvertently in the USNS Comet staging area instead of at the security warehouse. A special guard was required until the cargo could be offloaded from railcars and secured.

b. CONEXs on gondola railcars were loaded with the doors facing the side of the railcar instead of loading door to door. This permitted the doors on six CONEXs to spring open, breaking the banding, and making that cargo susceptible to pilferage.

c. CONEXs were loaded six to a gondola railcar at Fort Carson. The CONEXs were tied down with number 8 gauge wire (twisted). This left an unbraced open space of approximately 6 feet (1.8 meters) between the last CONEX and a communications shelter loaded at the other end of the car. This lack of bracing caused the wire tiedowns to break and, in one case, the entire CONEX load to shift against the communications shelter (fig 8-12).

Figure 8-12. Broken wire tiedowns on gondolas.

d. In several instances, equipment loaded on chain tiedown flatcars arrived at MOTBY with the chains loose, broken, or missing (figs 8-13 and 8-14).

e. Thirty-two TOW carriers arrived at MOTBY with the optical sights and missile guidance sets installed. This made each of the carriers a Category II sensitive item, requiring around-the-clock guarding. This requirement was eliminated by removing the sensitive items from the TOW carriers, packing them in a CONEX and securing the container in the security warehouse

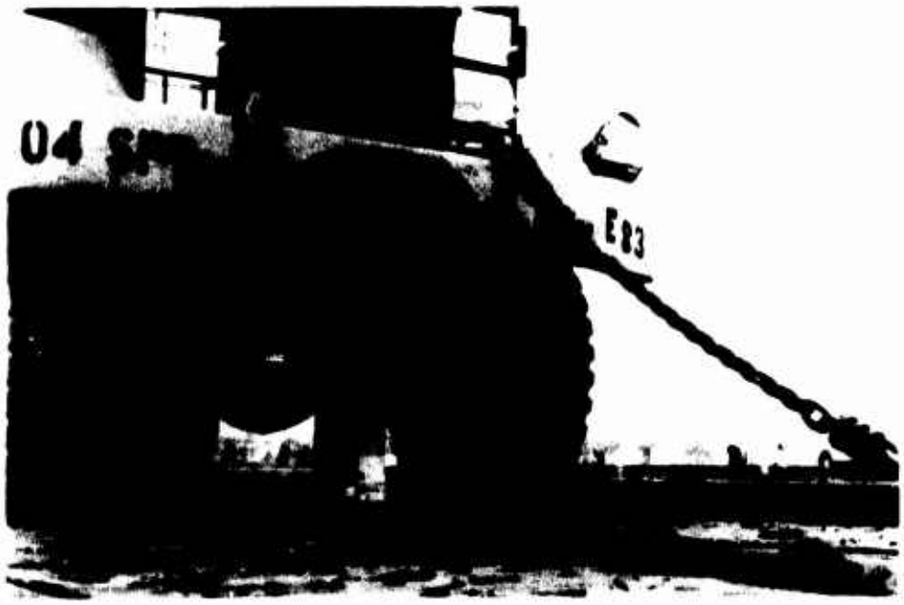

Figure 8-13. Loose chain tiedowns.

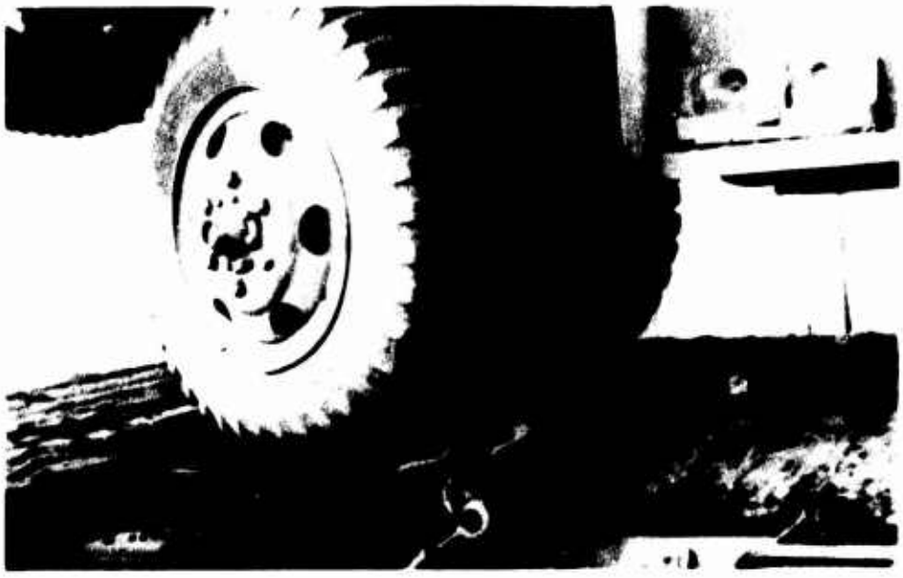

Figure 8-14. Unhooked and missing chain tiedowns.

f. Sixteen CONEXs arrived at MOTBY containing mixed categories of hazardous cargo without any hazardous cargo labeling. These CONEXs had to be unstuffed and restuffed to insure proper hazardous material segregation and labeling.

g. During the offloading of dunnage-free flatcars at MOTBY, only one 5/8-inch thick (1.59-cm) railcar steel spanner was used in most cases. In several instances, the spanner required forklift support from the underside. The shortage of adequately strengthened spanners made it necessary to shift railcars and end-loading ramps each time two railcars were offloaded. Although the rail offloading operation was completed within the planned time frame, it would have been more efficient to use additional and stronger spanners.

h. The quality of COMPASS data for the deploying forces was generally excellent. One exception to this was the arrival of twenty-six 2-1/2-ton trucks with 1-1/2-ton trailers, programed for the GTS Admiral William M. Callaghan, and twelve 2-1/2-ton trucks with 1-1/2-ton trailers, programed for the SS Washington/USNS Comet, that were built-up to heights between 8 and 12 feet (2.44 and 3.66 meters). These outsize loads were not reflected in the COMPASS data, nor were they configured in conformance with AR 220-10. These loads required that adjustments be made to each ship prestow plan (fig 8-15).

i. Generally, the vehicle cargo space was filled with unit equipment or was reduced for oversea shipment in compliance with AR 220-10. (This was not true during REFORGER 76.) There were instances, however, where sideboards and canvas had been left on empty vehicles (fig 8-16).

4. Vessel loading at MOTBY.

a. General.

(1) On 9 August 1977, the Military Sealift Command notified MTMC that the SS Washington was withdrawn as a deployment REFORGER 77 vessel and that the alternate vessel, the USNS Comet, would be utilized. The USNS Comet had been on berth at MOTBY awaiting sailing instructions since 31 July 1977. On 10 August the ship was moved to the S1-S2 berth at MOTBY for loading of REFORGER 77 cargo.

(2) Contingency prestow plans and template stows were prepared by MTMC and coordinated with MSC and the captain and chief mate of the USNS Comet prior to the announcement, on 9 August, that it would be utilized for REFORGER; hence, the late switch of ships had no major impact on

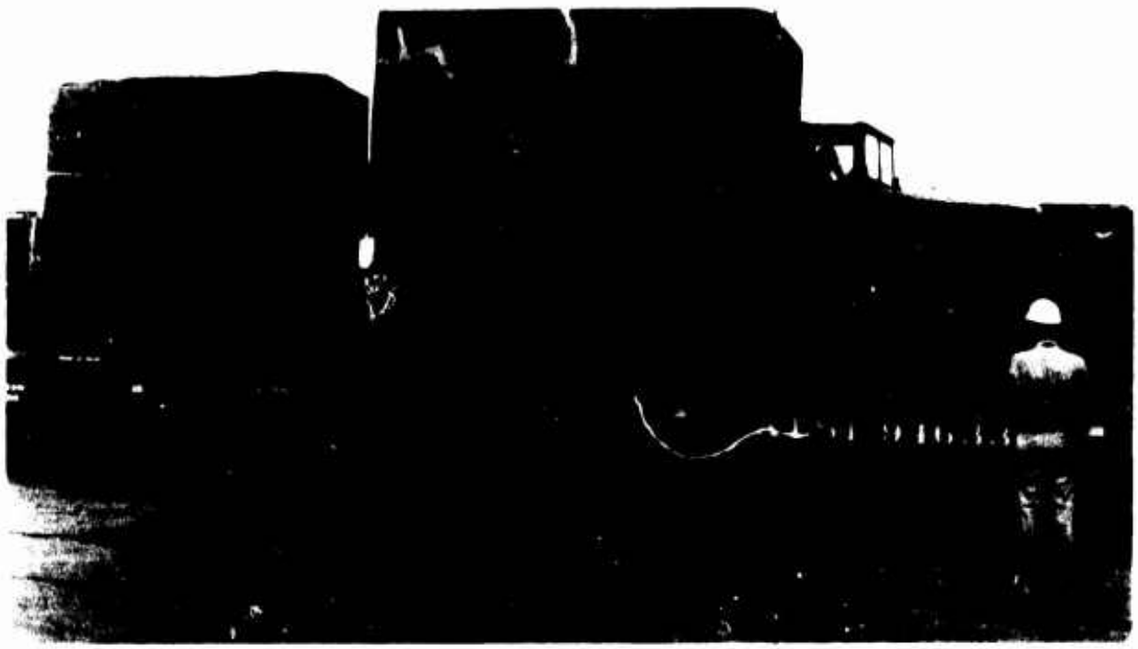

Figure 8-15. Built-up vehicles.

Figure 8-16. Improper height reduction.

terminal operations. The 22 railcars loaded with M-60 tanks and M-88 M-88 tank retrievers scheduled for loading by floating crane onto the SS Washington were then offloaded to the quay for USNS Comet roll-on loading. Twelve "built-up" M-105 1-12-ton trailers were switched from the USNS Comet to the GTS Callaghan with like items in a reduced configuration.

(3) Shiploading operations commenced 11 August and were completed on 13 August 1977. Exact loading times are contained in table 8-3.

TABLE 8-3
VESSEL LOADING TIMES

Vessel	Start	Complete	Elapsed Time
GTS Callaghan	110800 Aug	131630 Aug	56-1/2 hours
USNS Comet	110800 Aug	131835 Aug	58-1/2 hours

(4) Stevedores worked from 0800 until 2100 hours on 11 and 12 August 1977 and from 0800 to completion time on 13 August 1977. Universal Stevedoring Company provided stevedoring services for both ships.

(5) The GTS Callaghan was berthed at the MOTBY RORO berth, and the USNS Comet was berthed at the S1-S2 berth. Both areas proved adequate for RORO operations. Staging areas were directly adjacent to the berthed ships and greatly facilitated the cargo call forward procedures.

(6) A tight stow was necessary on both ships to meet ship loading plans. Normal RORO operations were modified by using forklifts and stevedore personnel to lift and push vehicles and trailers into spaces where drive-in was not possible. All tiedowns were double checked to insure a stable, damage-free voyage.

b. USNS Comet loading.

(1) The USNS Comet was loaded, using side ports (fig 8-17) for RORO operations and ship's gear for lifting cargo into hatches numbers 1 and 2 for deck-loading cargo, and for loading helicopters into hatch number 4A.

(2) The major concern in loading the USNS Comet was cargo height. Only reduced-height 2-1/2-ton trucks could be loaded below the upper tween deck; therefore, space in the number 3UH, 1UT, and 2UT holds was not fully utilized.

Figure 8-17. Use of USNS Comet side port.

(3) Stevedoring gangs were used as follows:

11 Aug	3 gangs (2 RORO, 1 LOLO)	0800-2100
12 Aug	3 gangs (2 RORO, 1 LOLO)	0800-1200
	2 gangs (1 RORO, 1 LOLO)	1200-2100
13 Aug	2 gangs (2 LOLO)	0800-1835

(4) The three UH-1 helicopters stowed in number 4UT hold were loaded as planned. The angle of tilt on the helicopter was not as severe as anticipated, but the mast could not be moved out of the square of the hatch on the USNS Comet.

(5) The jumbo boom on hatch number 3A overheated and was shut down prior to the last heavy lift on the forward main deck (fig 8-18), necessitating an adjustment to the stow (the last tank was placed on the starboard side aft main deck and an M-579 GOER was placed on the number 4A hatch cover).

c. GTS Callaghan loading.

(1) Table 8-3 indicates GTS Callaghan loading times. Loading procedure used on the GTS Callaghan was drive-on (fig 8-19), except for

Figure 8-18. USNS Comet heavy lift.

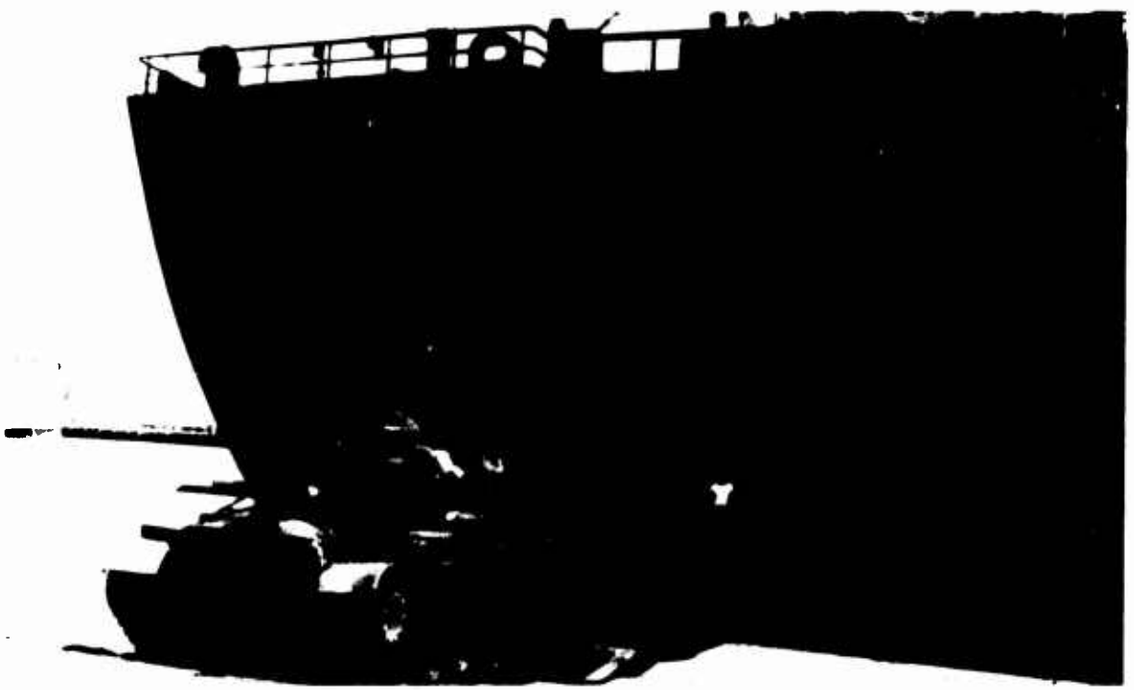

Figure 8-19. GTS Callaghan drive-on.

the general cargo in hatch number 1 upper tween deck, and vehicles and other break-bulk cargo on the main deck over hatches numbers 1 and 2.

(2) Vehicles were called forward to each particular hold by type, thus insuring the maximum use of available space and the use of smaller items, such as trailers, as space fillers. Vehicles were stowed as tightly as possible (fig 8-20) with forklifts used to place vehicles in stow locations where they could not be driven.

Figure 8-20. GTS Callaghan main deck stowage.

(3) Tiedown of vehicles was accomplished in the normal manner and good tiedown patterns were achieved on all vehicles. The location of deck tiedown fittings did not present a problem; however, some vehicles did not have tiedown shackles installed, and required that tiedowns be placed around bumpers or frames. The lack of adequate vehicle tiedown shackles did cause minor delays and hindered loading operations.

6. Summary.

a. The receipt, segregation, staging, and loading of REFORGER 77 cargo and equipment at the Military Ocean Terminal, Bayonne, New Jersey, was accomplished in a preplanned, efficient manner; however, the operation did result in identifying a few problem areas for consideration in future exercises.

b. Areas requiring improvement:

(1) It is essential that the shipping organization properly identify sensitive shipments on Government bills of lading and all other documentation to insure that transshipment points are aware of the nature of the cargo and make arrangements for proper security.

(2) Close attention must be given to the proper loading and labeling of hazardous cargo.

(3) Adequate numbers of railcar spanners must be provided in the interest of efficiency.

(4) Vehicles must be equipped with proper tiedown shackles.

SECTION IX

SPOD OPERATIONS - EUROPE

1. General.

a. One of the primary objectives of the REFORGER 77 deployment phase was to exercise Host Nation technical agreements involving the BENELUX line of communication (LOC) under the Host Nation support concept. European deployment SPOD operations were, therefore, essentially Host Nation Ministry of Defense operations performed by local stevedore and longshoring contractors under the direction of the Host Nation military port authorities, with MTMC TTGE providing technical liaison and assistance. To accomplish this objective, MTMC TTGE with its subordinate command, MTMC BENELUX Terminal, provided liaison and assistance to the Royal Netherlands Army and the Belgian Army for the reception, discharge, and port clearance of cargo from the GTS Admiral William M. Callaghan and USNS Comet at the ports of Amsterdam, The Netherlands, and Ghent, Belgium.

b. MTMC BENELUX Terminal documented all REFORGER cargo and equipment clearing both ports, in accordance with MILSTAMP procedures and standard NATO agreements (STANAG) documentation. The STANAG documentation commenced with MTMC TTGE and Host Nation receipt from MTMCEA of the STANAG sailing signal 2166. The remaining STANAG documentation (STANAG 2156 for that cargo clearing the port by rail, and STANAG 2155 for the cargo clearing the port by convoy) was the responsibility of the 4th Transportation Brigade. Although the STANAG 2155 was not used, STANAG documentation procedures during this exercise were significantly improved and provided greater exercise realism than during REFORGER 76.

c. The MTMC BENELUX Terminal was augmented by the 140th and 160th Contract Supervision (CS) Teams and the 172d and 358th Cargo Documentation (CD) Teams deployed from CONUS to supplement the terminal's operations. During REFORGER 77 the teams were assigned several specific functions, and their actual participation in REFORGER port operations was much greater than during REFORGER 76. In addition to the CS and CD teams, MTMC BENELUX Terminal used 4th Infantry Division (M) (-) drivers to perform the roll-off discharge operations at both sites. (This was necessary because European stevedores are not licensed to operate US military vehicles.)

d. In order to provide the necessary command and control for SPOD operations, the Commander, MTMC TTGE, developed port organization structures for both The Netherlands and Belgium (figs 9-1 and 9-2). MTMC TTGE group operations centers were established at the ports of Amsterdam, The Netherlands, and Ghent, Belgium, on 27 August 1977, and remained operational until 3 September 1977, when port clearance was completed.

e. Damage to equipment during the ocean voyage and terminal operations was minimal and consisted primarily of minor scrapes and scratches and surface salt water rust on top-deck-stowed vehicles. The windshields on twenty-seven 1/4-ton trucks were found to be cracked; however, the location at which this damage occurred could not be determined since the windshields had been covered and banded at home station.

f. As mentioned in an earlier section, a tight stow was required for all REFORGER 77 cargo; however, the tightness of stow did not interfere with the ship discharge since preplanning at MOTBY had considered the discharge procedures to be used in Europe. Continuous communication between MTMC TTGE and MTMCEA also was a major factor in the rapid discharge of both ships. The key to successful RORO operations is to insure that the initial vehicles discharged from a hatch can be driven directly out with little or no maneuvering. Another essential element of rapid ship discharge operations is efficient maintenance contact teams to start repair of inoperable vehicles stowed onboard the ships. The 21st SUPCOM maintenance contact teams at both ports were excellent.

g. Ship discharge times are:

Ship	Discharge began	Discharge completed	Elapsed hours
GTS Callaghan	010742 Sep	020850 Sep	25 hrs
USNS Comet	010600 Sep	020100 Sep	19 hrs

2. Amsterdam port operations.

a. The facilities used in the port of Amsterdam are shown in figure 9-3. The GTS Callaghan was berthed at 1724 hours, 31 August 1977, at the West Terminal's permanent RORO ramp (fig 9-4). Lashing gangs immediately started unlashing the equipment in order to expedite discharge operations commencing on 1 September 1977.

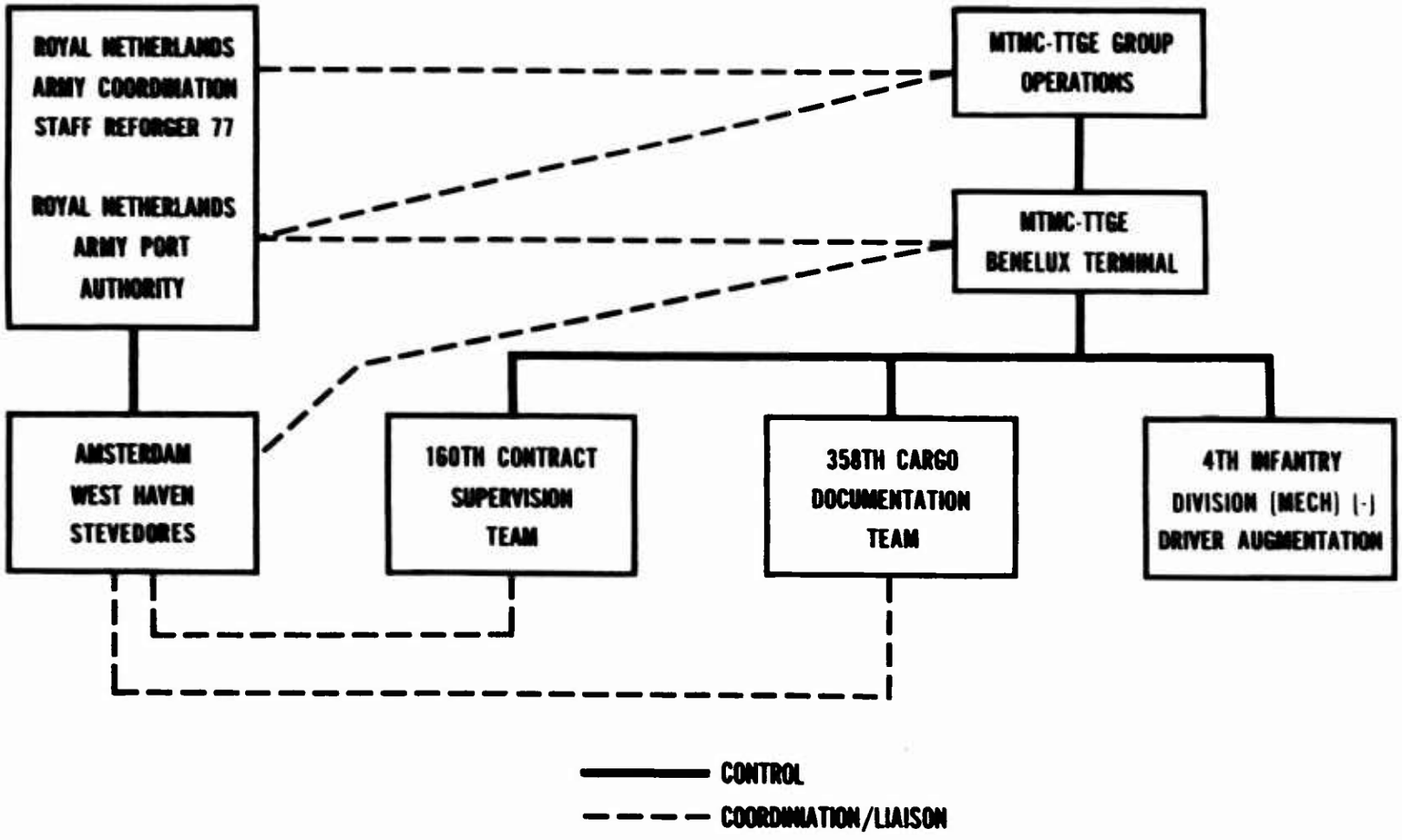

Figure 9-1. MTMC TTGE and The Netherlands organizational structure.

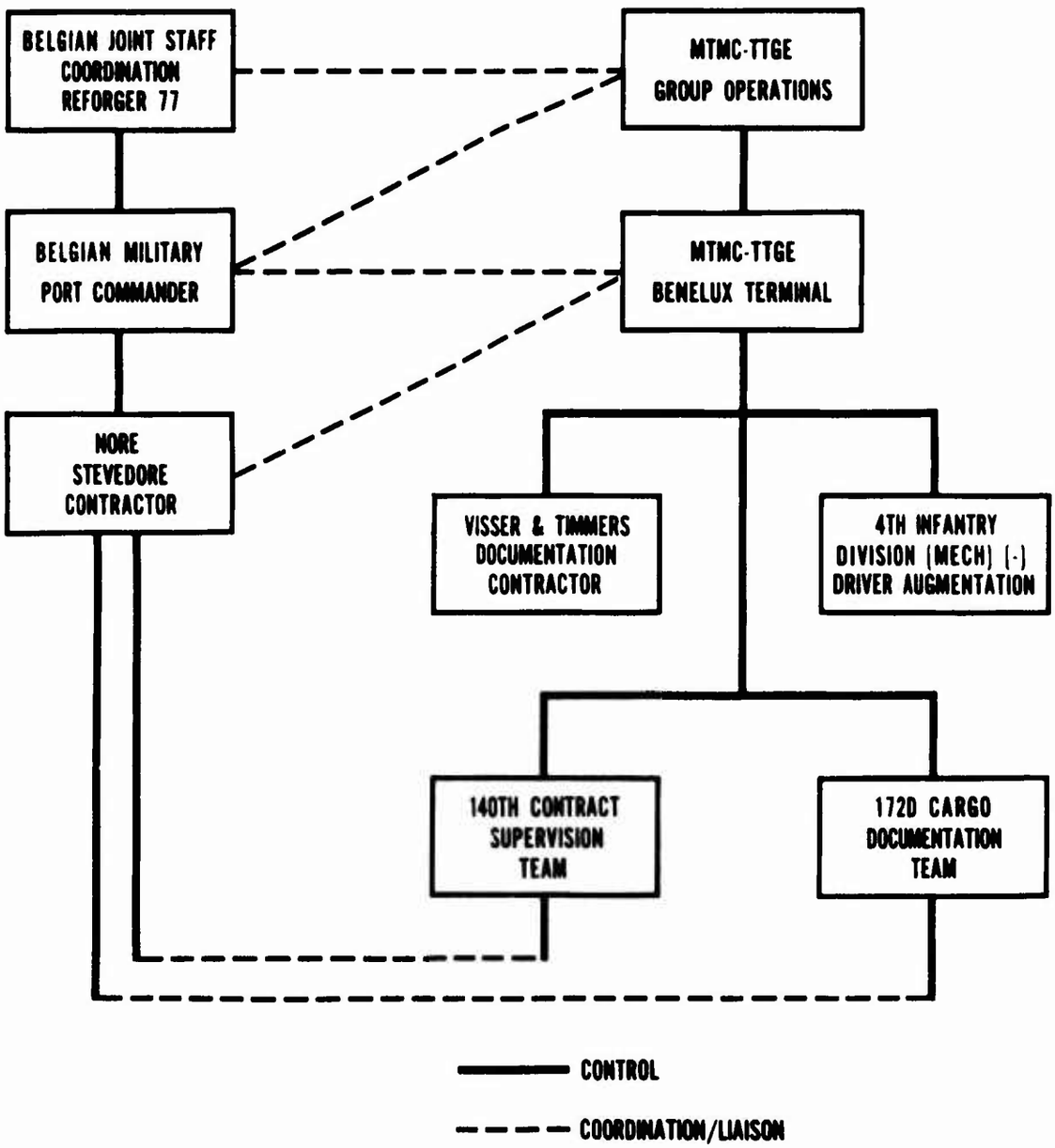

Figure 9-2. MTMC TTGE and Belgian organizational structure.

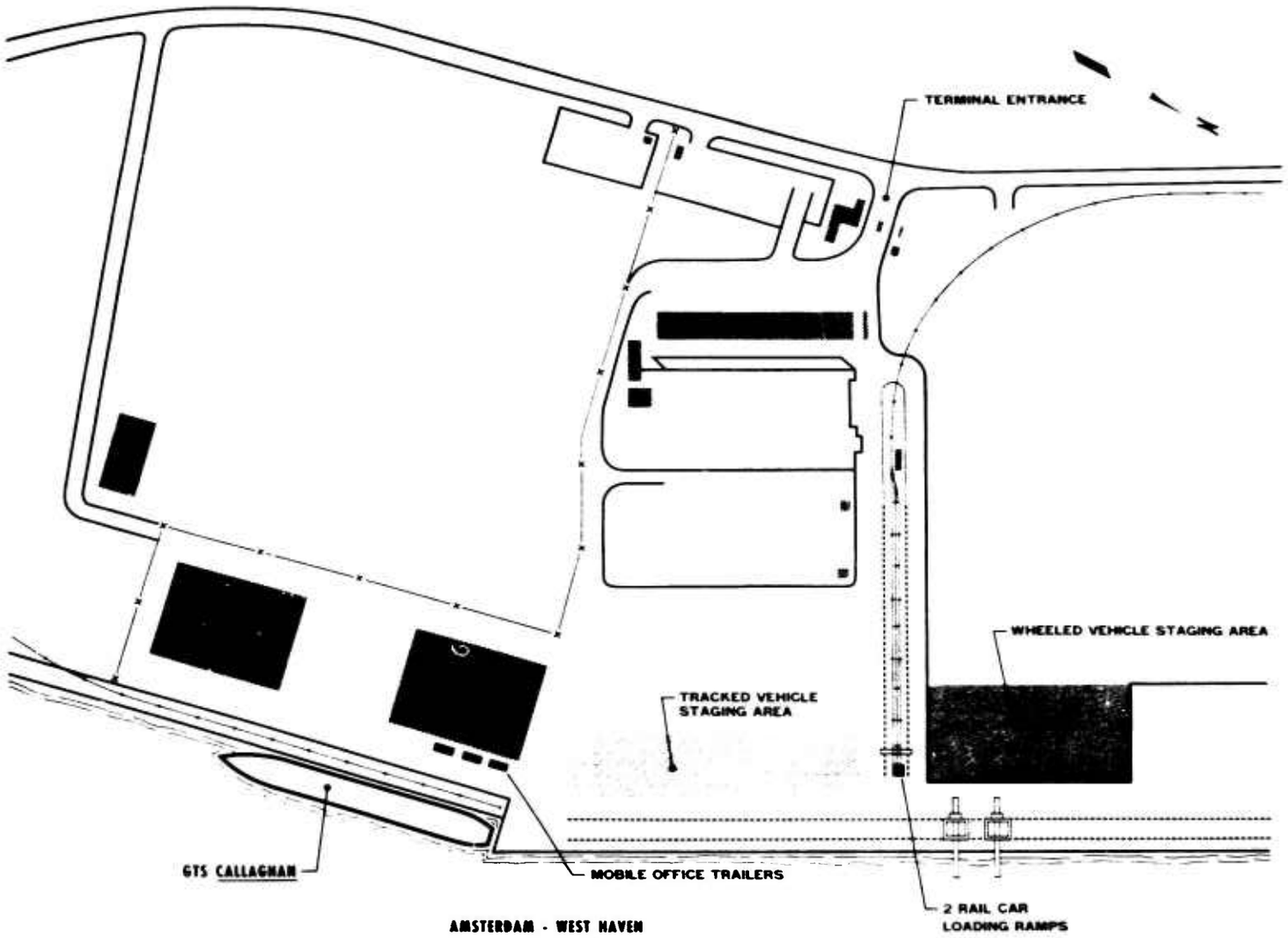

Figure 9-3. Amsterdam port facilities.

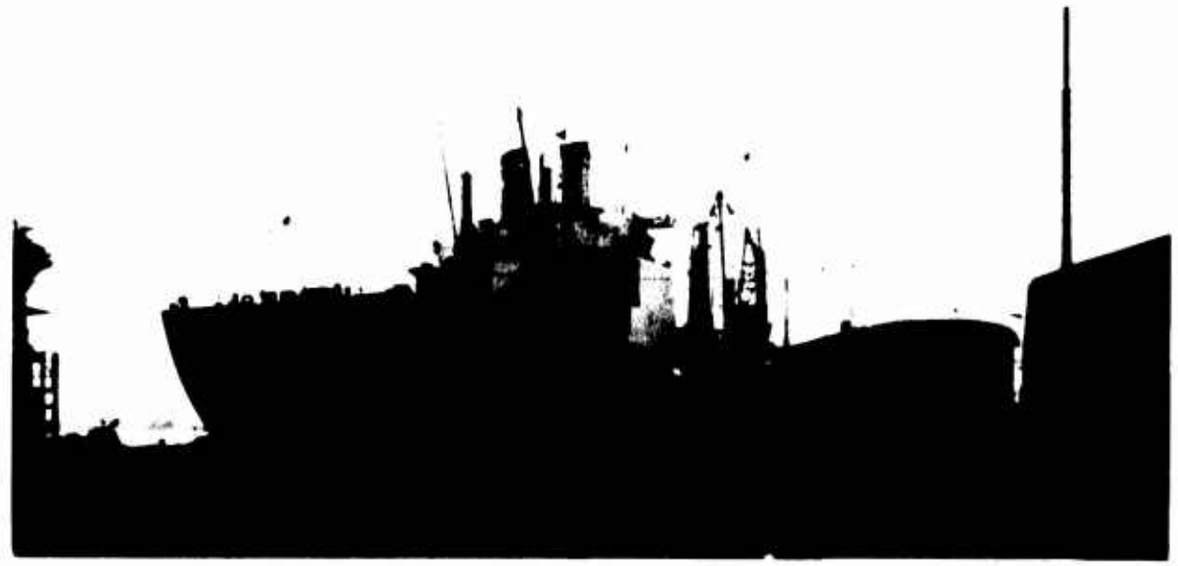

Figure 9-4. GTS Callaghan at Amsterdam RORO ramp.

b. The GTS Callaghan was discharged on an around-the-clock basis, using the stern ramp for RORO operations and shore cranes to lift off equipment on hatches 1 and 2. Drivers furnished by the 4th Infantry Division (M) (-) were divided into two teams, each working a 12-hour shift. Stevedores worked 8-hour shifts.

c. Tracked and nonconvoyable vehicles were driven off the stern ramp and lined up, by type, in the designated staging area (fig 9-5) for subsequent loading on railcars, using the two rail loading ramps furnished

Figure 9-5. Discharged tracked vehicles staged for rail loading.

by The Netherlands Ministry of Defense (figs 9-6 and 9-7). These ramps rested on the end of the flatcar and attached to the rail track, thus preventing movement of the railcar during loading operations. When loading is completed, the ramp can be disassembled and shipped on a railcar underneath the tanks being moved. These ramps proved to be the most satisfactory method for loading tanks during REFORGER 77 operations.

d. Convoyable wheeled vehicles with trailers were lined up in a temporary staging area in order of discharge from the ship (fig 9-8), for subsequent movement to Haarlem, The Netherlands, which was the designated convoy assembly area, approximately 16 miles (25 kilometers) from the port.

e. A documentation checkpoint that was established approximately 75 meters from the GTS Callaghan's stern ramp caused some backup of vehicles awaiting discharge. If documentation for a particular vehicle was not available or needed correction, all vehicles were held in line until the problem was resolved. The only other significant ship discharge problem was the requirement to back tractor-trailer combinations down the ramp from the main deck. (Maneuver room on the main deck was restricted by a number of trailers requiring lift-off.) By the afternoon of 1 September 1977, however, the lift-off operations were completed and drive-off operations from the main deck were no longer restricted.

f. Loaded railcars were secured at the loading site. After approval by The Netherlands Railway Inspector, groupings of 12 to 15 railcars were moved to a marshalling area 3/5-mile (1 kilometer) from the loading site (fig 9-9). This procedure accelerated the port clearance operation.

g. Initial difficulties in lining up convoyable vehicles by unit caused an overflow of vehicles in the temporary staging area. The problem was resolved by lining up vehicles regardless of unit and shuttling them to the convoy assembly area.

h. A sea/air interface for port clearance was exercised at Amsterdam. Thirty C-120 sorties were used to move designated signal equipment to Stuttgart, Germany, from the aerial port of Ypenburg, The Netherlands. This operation proceeded smoothly once the equipment to be moved by air was identified by port officials.

i. Terminal operations were concluded on 3 September 1977 with the loading of the last train of REFORGER cargo.

Figure 9-6. Rail loading ramp furnished by The Netherlands.

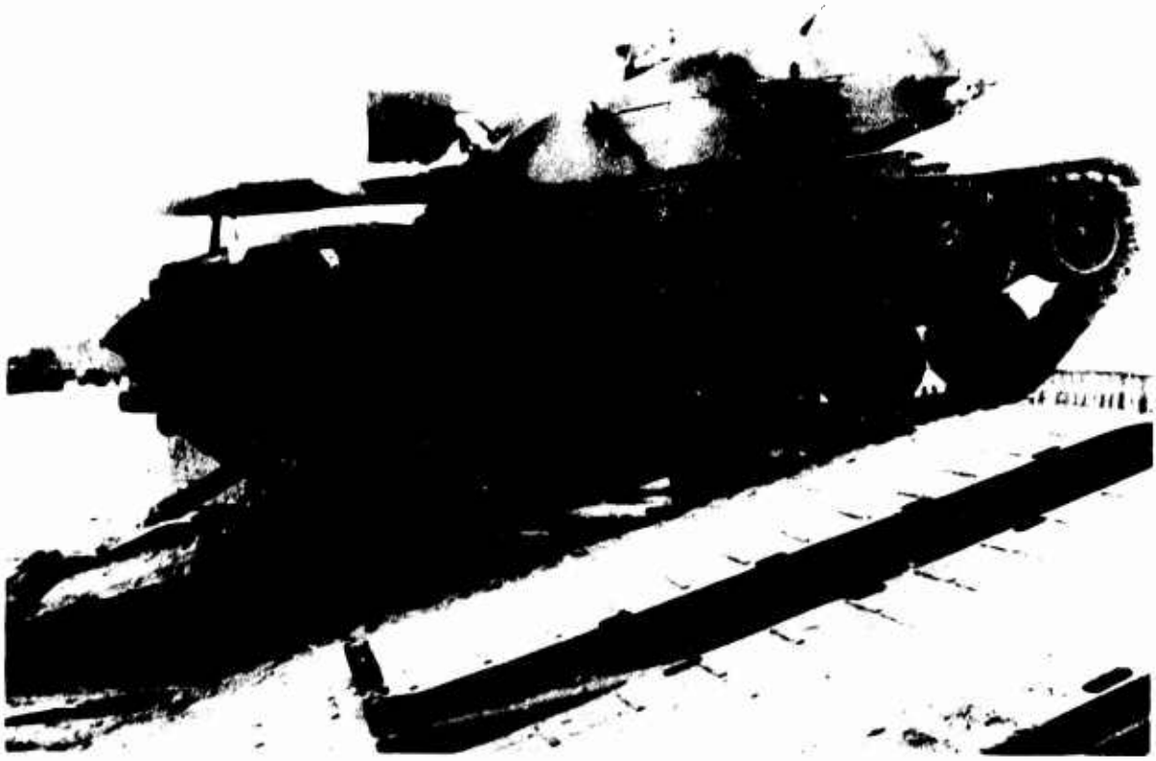

Figure 9-7. Rail loading ramp furnished by The Netherlands.

Figure 9-8. Roadable vehicles lined up for drive-away.

Figure 9-9. Tracked vehicles awaiting blocking and lashing.

3. Ghent port operations.

a. The facilities in the port of Ghent used for REFORGER 77 are shown in figure 9-10. The USNS Comet was berthed at 2035 hours, 31 August 1977, at the Sifferdock permanent RORO ramp. Lashing gangs worked through the night to unlash all vehicles in prepartion for RORO operations. In addition, four M-60 tanks were driven off the stern ramp to test its suitability for discharge operations.

b. The angle of the stern ramp proved too steep for RORO operations. Adjustments were made by placing the ship's side ramp on a wooden frame, and then lowering the stern ramp on top of the side ramp. This reduced the angle, but it was still fairly steep (fig 9-11). As soon as the upper tween deck was cleared, the aft side ramp was installed and utilized for the remainder of the RORO operations. (During REFORGER 76, the USNS Meteor was berthed at the same site, and its stern ramp was compatible with this RORO ramp; however, the USNS Comet's stern ramp is shorter by 15 feet 5 inches (4.7 meters); USNS Meteor's stern ramp is 44 feet 11 inches long (13.7 meters); and the USNS Comet's is 29 feet 6 inches long (9 meters), thus causing the steep ramp angle. The drafts of both ships is the same, and the water level is constant in the locked port of Ghent.)

c. The USNS Comet was discharged on an around-the-clock basis utilizing the stern ramp initially, and then the aft side ramp for RORO operations (fig 9-12). Shore cranes (fig 9-13) were used for lift-off of cargo from hatches 1 and 2, the main deck, and for the three helicopters from hatch number 4UT deck. Heavy lifts from the main deck were discharged by the aft jumbo boom of the USNS Comet. Drivers from the 4th Infantry Division (M) (-), scheduled to work in 12-hour shifts, acutally worked from start to finish, shortening discharge time. Stevedores worked 8-hour shifts.

d. Tracked and nonconvoyable vehicles were driven to the quay apron for temporary staging prior to railcar loading (fig 9-14). Vehicles were driven onto the railcars, using one rail loading ramp furnished by the Belgian Ministry of Defense (figs 9-15 and 9-16).

e. Convoyable vehicles and trailers were temporarily staged by type without regard to unit integrity, prior to movement to the convoy assembly area at Haasdonk, Belgium, 16 miles (25 kilometers) from the port. The temporary staging operation proceeded as planned.

f. Nonvehicular lift-off cargo was loaded directly onto railcars pre-positioned on the quay.

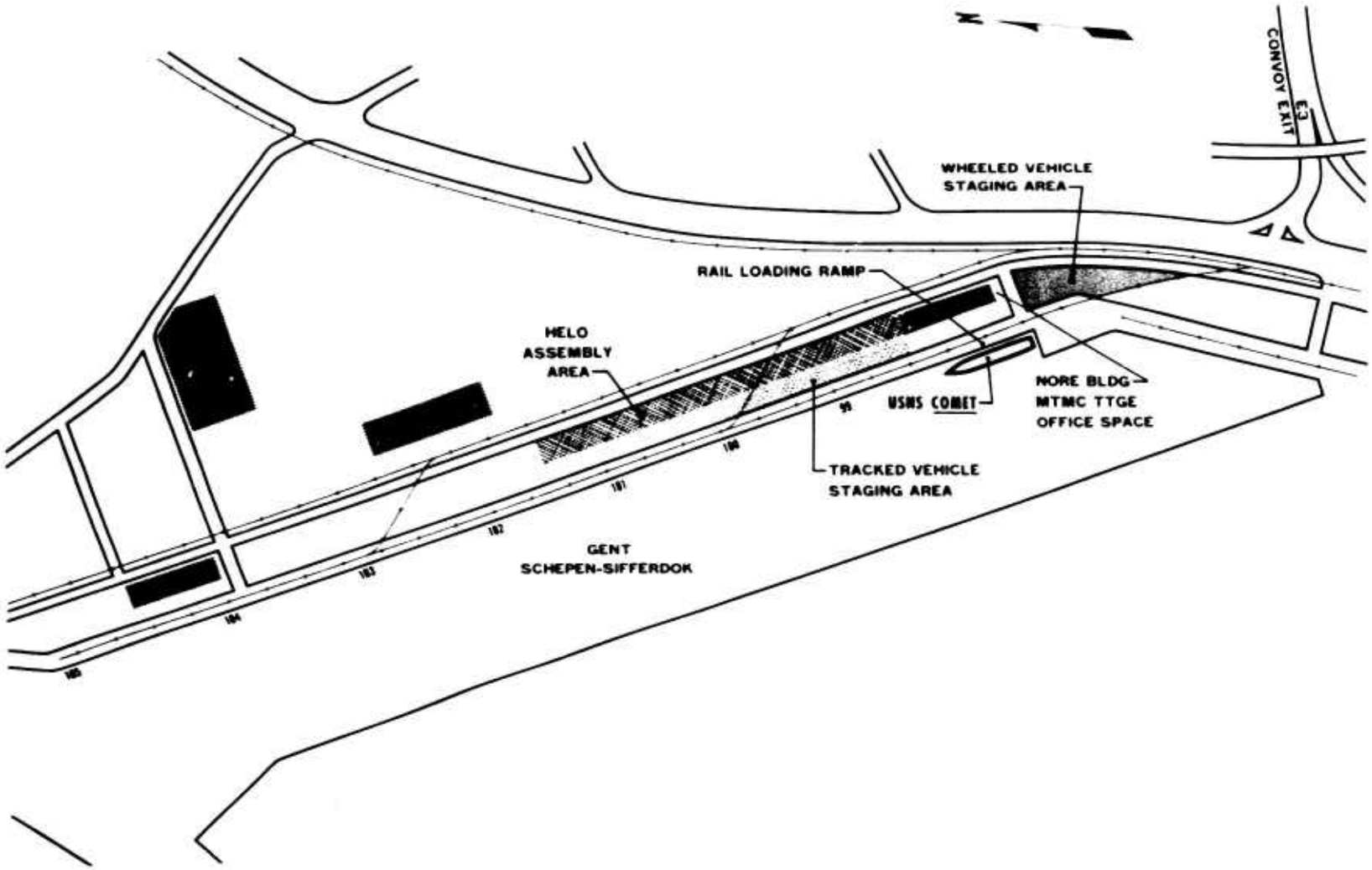

Figure 9-10. Ghent port facilities.

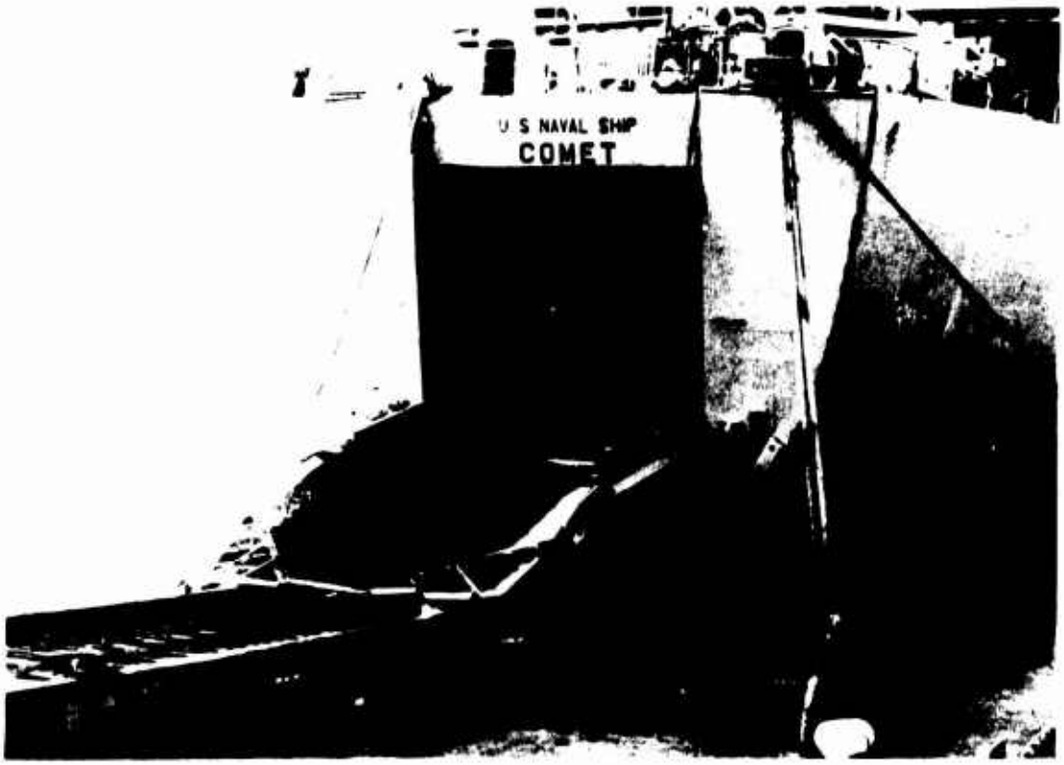

Figure 9-11. USNS Comet stern ramp.

Figure 9-12. USNS Comet aft side ramp discharge.

Figure 9-13. Quay cranes discharging USNS Comet cargo.

Figure 9-14. Vehicles staged for rail outloading.

Figure 9-15. Rail loading ramp at Ghent.

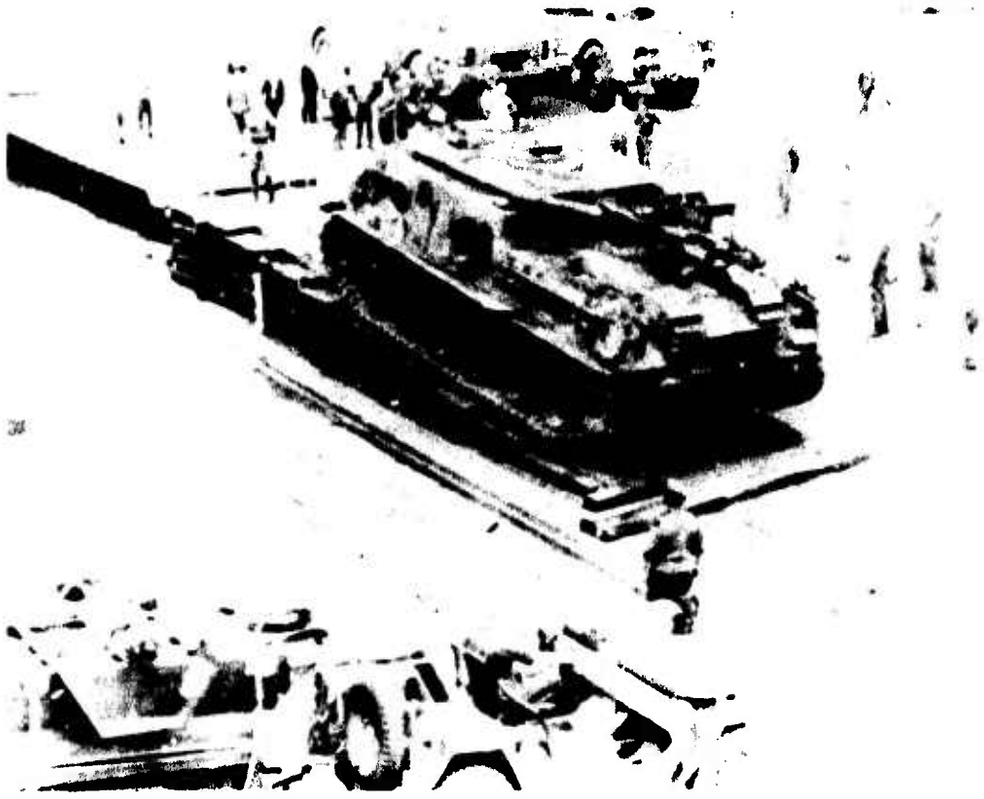

Figure 9-16. Rail loading ramp at Ghent.

g. The Belgian stevedores elected to utilize the 10-ton shoreside gantry cranes to lift cargo off the main deck and from hatches 1 and 2 and also to lift the three UH-1 helicopters, instead of using the ship's gear. If heavy spreader bars had been available, lift-off operations of the M-60 tanks would have been more efficient. Since they were not available, special precautions had to be taken to avoid chafing damage to the rear of M-60 tank turrets from lift cables. The successful discharge of the three UH-1 helicopters was due in some measure to the contractor's helicopter unloading experience in REFORGER 76. Two port gantry cranes were married together to lift the helicopters and other lifts in excess of 10 tons.

h. An attempt was made to roll off equipment stowed on the main deck (fig 9-17). M-88 tank recovery vehicles, however, were too long to negotiate the stern deck driveway and required lift off.

i. A USAREUR aircraft maintenance team was onsite to provide helicopter lifting and moving gear and to reassemble and test fly the helicopters. Reassembly was concluded within an hour, but the test flight was delayed because the ignition keys had to be obtained from the helicopter crew that had been airlifted to Germany.

j. Port operations were concluded 3 September 1977 with the loading of the last train.

Figure 9-17. M60 tank on main deck drivethrough.

4. Summary.

a. SPOD operations were professionally planned and smoothly executed.

b. All operations, from ship discharge to port clearance, were accomplished ahead of schedule.

c. Lessons learned from the operation include the following:

(1) Ships must be stowed at the SPOE to facilitate SPOD discharge plans. For example, RORO hatches must have the vehicles backed into position so that the initial vehicles discharged from a hatch may be driven directly out with minimal maneuvering.

(2) Maintenanance teams are indispensable to fast, efficient RORO operation.

(3) The participation in port operations of contract supervision and cargo documentation teams, while greatly improved over REFORGER 76, did not fully test their TOE mission of contracting for and supervising the operation of a commercial port facility. While such participation may not be practical during a REFORGER type of operation, consideration must be given to testing the team's specified TOE mission of planning for an supervising the handling of military cargo in a foreign commercial port.

(4) Vessel side- and stern-ramp compatibility with RORO ramps and quay aprons must be taken into account at each port of discharge. In particular, the USNS Comet's stern ramp length may cause compatibility problems with low-level quay RORO ramps.

(5) The use of STANAG documentation procedures provided a significant improvement over REFORGER 76 in the coordination of transportation requirements with Host Nations, although all STANAG documentation forms should be used.

SECTION X

SHIP INTERIM USE

1. General.

a. The GTS Admiral William M. Callaghan, used to transport REFORGER 77 cargo and equipment to Europe, was fully employed by MTMC and MSC for routine Department of Defense cargo movements during the period between REFORGER 77 deployment and redeployment. While the GTS Callaghan was used for both deployment and redeployment, the USNS Comet's REFORGER mission terminated with deployment discharge as she was replaced by the SS Washington for the redeployment voyage.

b. REFORGER 77 MSC sealift was funded by the Department of the Navy and charged against REFORGER funds; however, $1,193,500 additional per diem cost would have accrued if the GTS Admiral William M. Callaghan had remained idle during the period between deployment and redeployment.

2. Specific ship utilization.

a. Upon completion of REFORGER 77 discharge operations on 2 September 1977 at Ghent, Belgium, the USNS Comet effectively completed her REFORGER 77 mission and proceeded to Bremerhaven, Germany, for a routine back load. (On 7 September 1977 she departed Bremerhaven with privately owned vehicles destined for Charleston, South Carolina.)

b. The GTS Admiral William M. Callaghan proceeded to Bremerhaven, Germany, for a back load, on 2 September 1977, after completing discharge operations at Amsterdam, The Netherlands. The GTS Callaghan subsequently made two round-trip voyages between Bremerhaven, Germany, and the Military Ocean Terminal, Bayonne, New Jersey, during the interim period. As a result of this utilization, the GTS Callaghan accrued no idle days. This effective interim utilization can be directly attributed to the detailed coordination accomplished at USREDCOM, from 26 to 29 April 1977, and the resulting adjustments to the REFORGER 77 redeployment schedule, thereby permitting two round trips.

c. The decision to employ the SS Washington for REFORGER 77 redeployment was reached on 19 September 1977. Upon completion of sea trials the ship departed for Rotterdam, The Netherlands, arriving 2 October 1977, for participation in the exercise commencing 8 October 1977.

3. Summary. The effective utilization of the GTS Admiral William M. Callaghan during the interim between the deployment and redeployment phases of REFORGER 77 was achieved. Utilization of the SS Washington during the redeployment phase partially achieved the goal of using a ship of the Ready Reserve Force in a major exercise.

SECTION XI

SPOE OPERATIONS - EUROPE

1. General.

a. MTMC TTGE exercised command and control of the redeployment of REFORGER 77 equipment by sealift through the European ports of Rotterdam, The Netherlands, and Bremerhaven, Germany. The move was accomplished as an administrative shipment utilizing existing MTMC TTGE port-handling contracts.

b. Cargo scheduled to be loaded on the SS Washington was shipped by Rhine River barges from Mannheim and Stuttgart, Germany, to Rotterdam, The Netherlands. Cargo to be loaded on the GTS Callaghan was shipped to Bremerhaven, Germany, from the final cleaning site, Boeblingen, Germany, via rail.

c. Upon completion of REFORGER 77 field exercises, all REFORGER equipment was moved to Boeblingen, Germany, for final customs clearance, certification of ammunition-free status, and Department of Agriculture clearances. This procedure was established to expedite the movement of REFORGER cargo through the SPOEs.

d. The USAREUR 4th Transportation Brigade was responsible for the movement of REFORGER cargo from the final cleaning site to the appropriate sea or river ports of embarkation in accordance with the REFORGER cargo call forward message issued by MTMC TTGE.

e. MTMC BENELUX and Bremerhaven Terminals were augmented by 4th Infantry Division (M) (-) personnel (drivers and mechanics) to assist in driving tracked vehicles and for emergency repair of all vehicles.

2. Rhine River Terminal (RRT) Operations.

a. REFORGER cargo was successfully loaded under the supervision of the MTMC TTGE Rhine River Terminal at four German commercial barge sites. One site was near Stuttgart, at Ploechingen, Germany (fig 11-1) and three sites were in Mannheim (Rheinau, Goliath Crane, and Silo D) (figs 11-2, 11-3, and 11-4).

b. Cargo was scheduled into the barges sites for loading according to a well-conceived and executed plan. The type of equipment loaded at each site and the mode of delivery to the barge site is depicted in table 11-1. Stevedores worked one shift per day on the loading dates indicated.

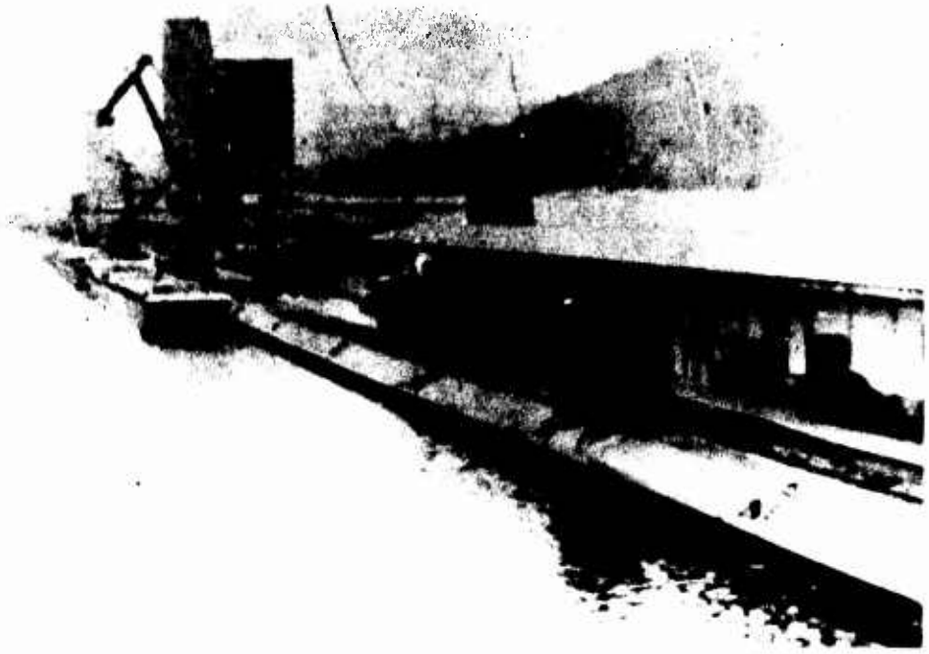

Figure 11-1. Barge site at Ploechingen, Germany.

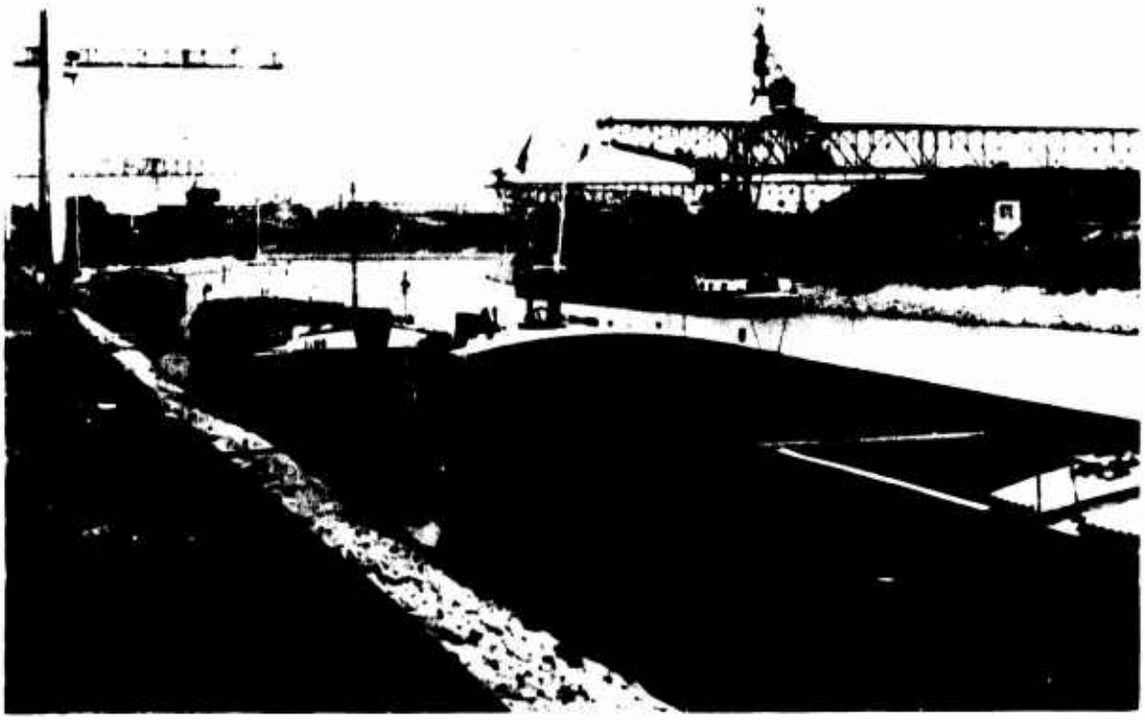

Figure 11-2. Barge site at Rheinau, Germany.

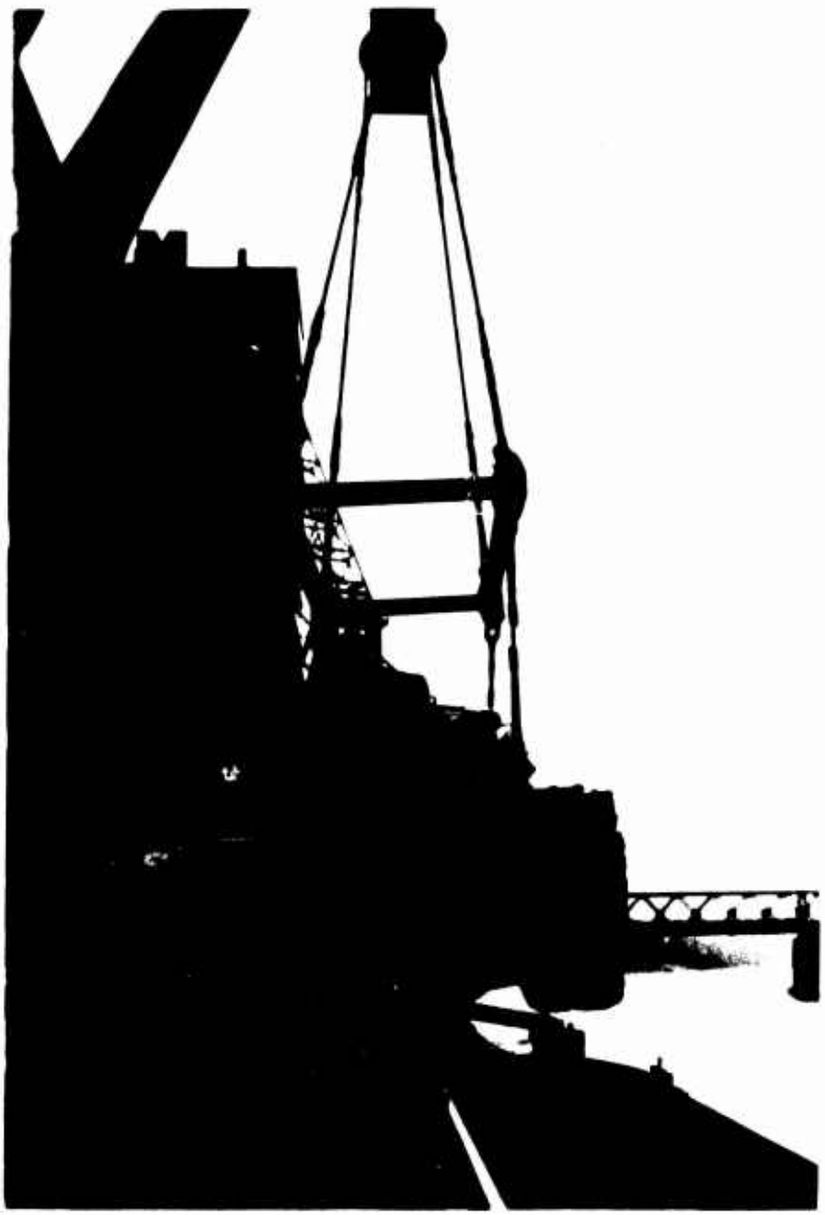

Figure 11-3. Barge site Goliath Crane at Mannheim, Germany.

Figure 11-4. Barge site Silo D at Mannheim, Germany.

TABLE 11-1
BARGE SITE LOADING SCHEDULE

Loading Dates	Site	Type of Equipment	Mode of Delivery
1 Oct	Ploechingen	M-561 Gama Goats	Military highway
		M-520, 553, 559 GOER	
3 to 6 Oct	Rheinau	Wheeled vehicles and trailers	Convoy
		Helicopters	Self deployed
		M-113 tow carriers	Military highway
3 to 4 Oct	Goliath Crane	Tracked recovery vehicles	Military highway
		M-60 tanks	Military highway
4 to 5 Oct	Silo D	CONEX boxes, shelters	Military highway

c. REFORGER equipment arrived at the barge loading sites by military vehicles (figs 11-5 and 11-6); by convoy (fig 11-7); and by helicopter fly-in (fig 11-8).

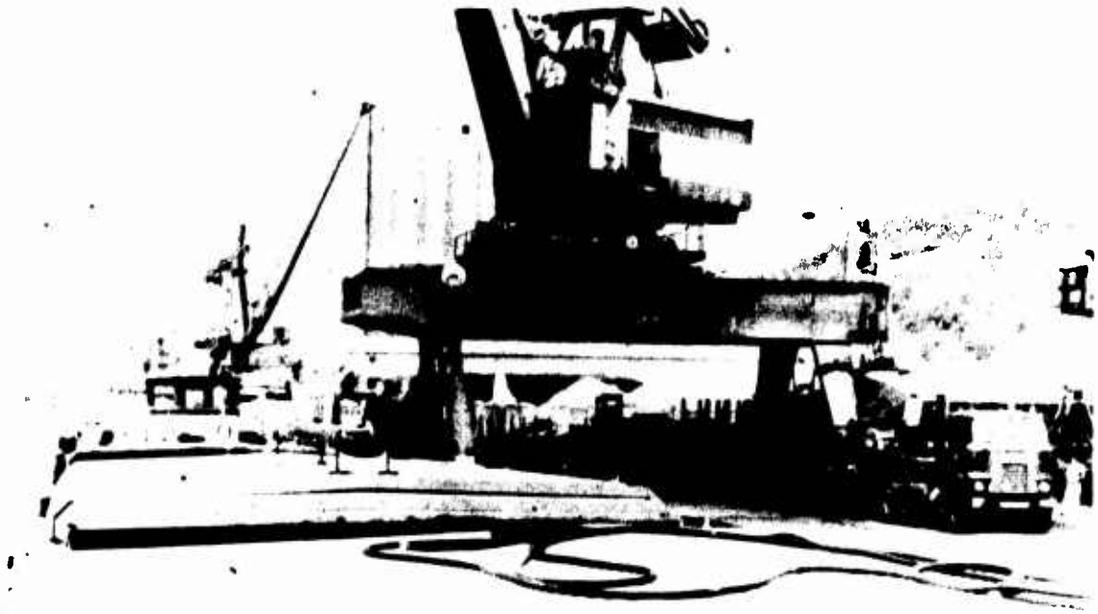

Figure 11-5. Highway delivery of equipment to Ploechingen.

Figure 11-6. Highway delivery of equipment to Goliath Crane.

Figure 11-7. Highway convoy arriving at Rheinau.

Figure 11-8. Helicopter arrival at Rheinau.

d. Equipment was staged by type (figs 11-9 and 11-10) or was loaded directly from highway assets to the barge (fig 11-11).

e. A total of 496 pieces of equipment was loaded on 12 Rhine River barges (figs 11-12 and 11-13). Table 11-2 identifies in detail the equipment loaded on each barge.

Figure 11-9. Staging at Rheinau.

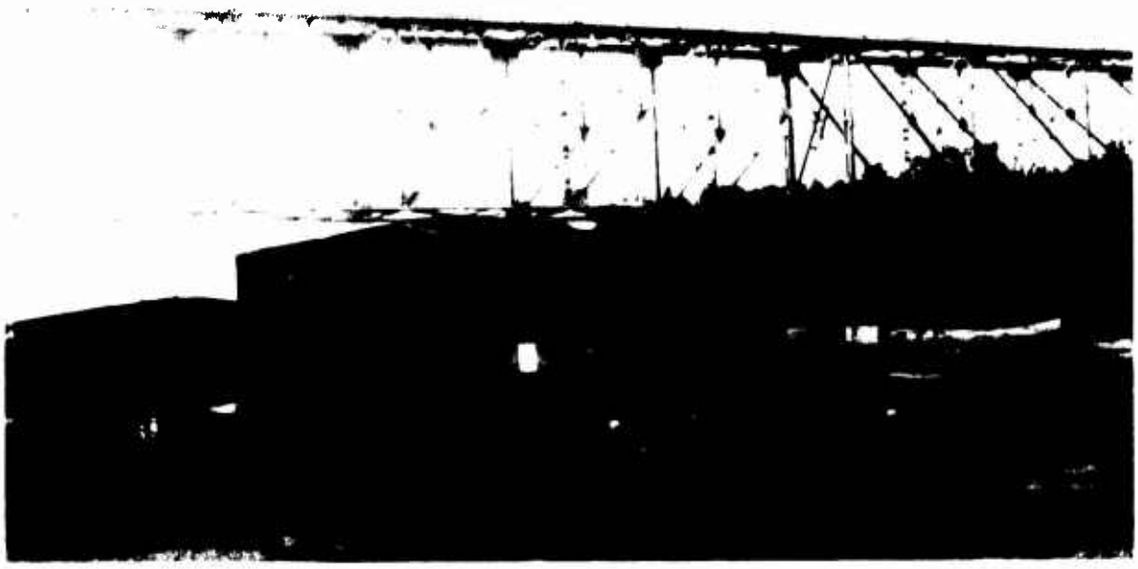

Figure 11-10. Staging at Rheinau.

Figure 11-11. Truck off-load to barge.

Figure 11-12. Vehicular loading on barge at Rheinau site.

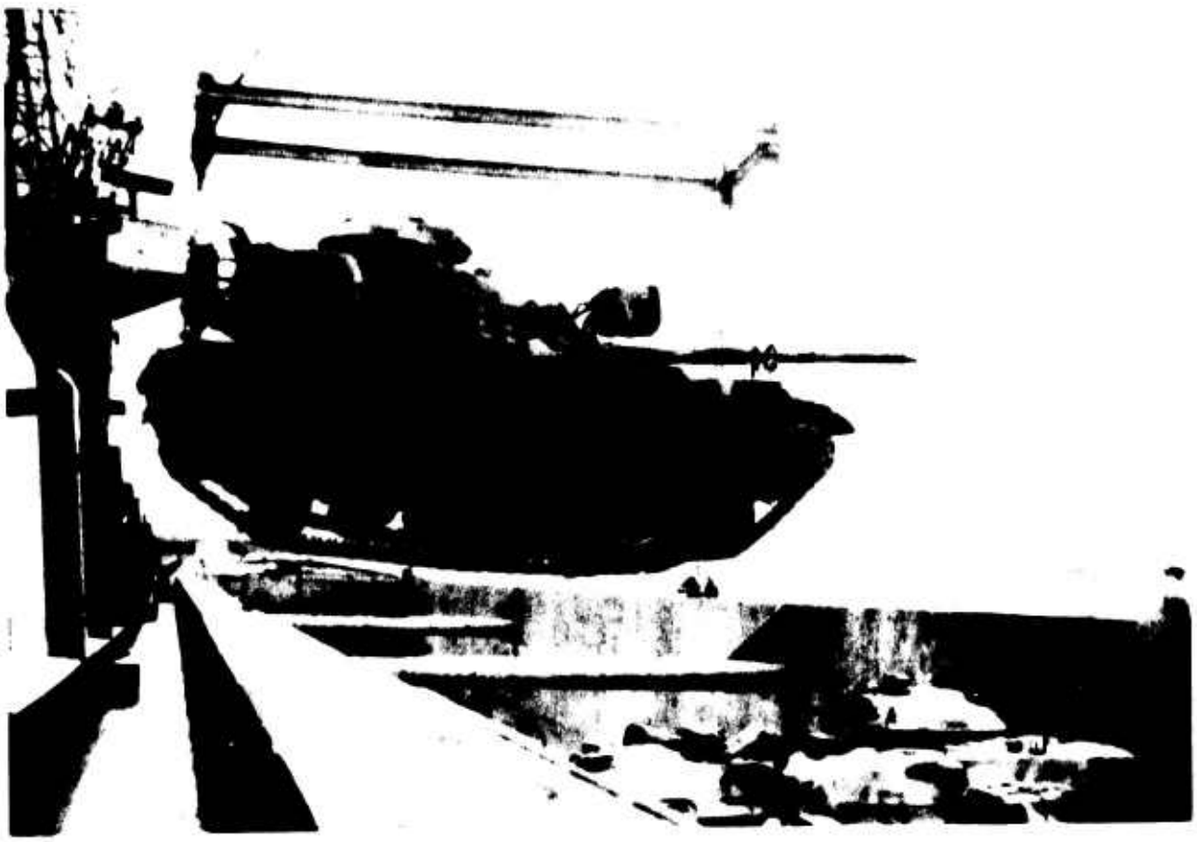

Figure 11-13. M-60 tanks in a barge at Goliath site.

TABLE 11-2
BARGE EQUIPMENT LOAD LIST

						BARGE NAME											
			LTON	TOTAL		EURECO	CREDO	STRAH-LENBURG	STADT NECKARELZ	ELMO	CORNELIA	GERARD PAUL	PIONEER	ERINA	HENJA	FAUNA	GALAXIE
PCS	M-SERIE	TYPE VEHICLE	UNIT WEIGHT	LT	MT	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
34	M-60	TANK	43.3	1,472	2,864			17	17								
5	M-88	REC. TANK	48.0	240	367										5		
2	M-578	REC. TANK	21.5	43	105										2		
18	M-113	CARRIER	9.7	174	476		2			16							
2	M-52	TRK TRACTOR	8.0	16	103												2
33	M-35	TRK CARGO	8.9	294	1,231		18					15					
17	M-54	TRK CARGO	9.4	160	742						10		7				
2	M-813	TRK	10.0	20	86								2				
2	M-46	TRK PHOTO	10.0	20	119								2				
1	M-715	TRK CARGO	3.0	3	19								1				
110	M-151	TRK UTIL (JEEPS)	1.1	120	704		10			25	27	48					
3	M-880	TRK PICK-UP	1.3	4	19							2	1				
2	M-543	TRK WRKR	16.0	32	122								2				
3	UH-1	HELICOPTERS	3.6	11	539												3
4	M-559	TRK FUEL GOER	12.5	50	246	4											
1	M-553	TRK WORK GOER	18.0	18	74	1											
1	M-520	TRK CARGO GOER	11.0	11	103	1											
25	M-561	GAMA GOAT	3.7	92	559	25											
1	M-792	AMB. GUAT	4.0	4	19	1											
1	M-189	TRL SHOPVAN	9.0	9	76												1
1	M-750	TRL SHOPVAN	11.0	11	57												1
35	M-416	TRL CARGO (NESTED)	0.5	18	262									35			
8	M-149	TRL WTR TNK	1.25	10	108									8			
1	M-101	TRL CARGO	1.0	3	31									1			
9	M-200	GEN'TOR TRLRS	1.8	16	114									9			
1	M-200	TRL TOOL	1.0	1	13								1				
49	M-105	TRL CARGO	1.4	15	63							6		43			
1	VEH	FORKLIFT R+L 10'	15.0	15	63	1											
7	PC	FUEL POD	0.1	1	15									7			
97	PC	CONEXES	2.2	215	894											97	
20	PC	SHELTERS	2.2	44	294								20				
496						33	30	17	17	41	37	71	36	103	7	97	7

f. The contractor made maximum use of barge-loading space. Trailers and 1/4-ton trucks were placed on cargo hatch covers (fig 11-14). Cargo was not secured on river barges since there is little risk of cargo shifting (figs 11-15 and 11-16). The three helicopters loaded into barges (figs 11-17 through 11-19) were blocked as a precautionary measure.

g. Barges were loaded to facilitate barge-to-ship loading operations of the SS Washington in Rotterdam.

h. Barge line-haul cost avoidance through the use of Rotterdam, over the alternate mode (that is, rail to the port of Bremerhaven) was $78,829.

i. RRT loading operations were affected by the tardy arrival and the poor condition of some equipment at the barge site. The following occurrences caused standby time for RRT contractor labor:

(1) CONEXs, which had been inspected and passed by the Department of Agriculture personnel at Boeblingen, were again inspected at the barge loading site, and dirt was found in the skids, thus requiring further cleaning.

(2) Helicopter loadings at the Rheinau site were initially delayed up to 3 hours. Only two pilots were assigned to ferry the three aircraft from Coleman Army Airfield to Rheinau, and the pilots had to be driven over busy city streets returning to the airfield. An approximate 2-hour operation was stretched into 6 hours.

(3) Military highway assets did not arrive in a timely manner to support the continuous barge-loading operations at Ploechingen and Silo D.

j. Documentation and marking of sensitive cargo was inadequate. The shipping units failed to change the sensitive cargo markings on CONEXs and documentation; consequently, CONEXs were marked as containing security cargo that were not so annotated on the TCMD, and TCMD showed CONEXs as containing security cargo when, in fact, they did not. This situation was further complicated by the lack of a knowledgeable unit representative at the Rhine River Terminal; also, the actual weights of the CONEXs were in doubt, since the original deployment weights were still marked on the CONEXs and TCMDs.

k. Problem areas identified during RRT operations.

(1) REFORGER units must weigh and correct CONEX markings and TCMDs with actual weights and contents prior to departure from the redeployment collection point.

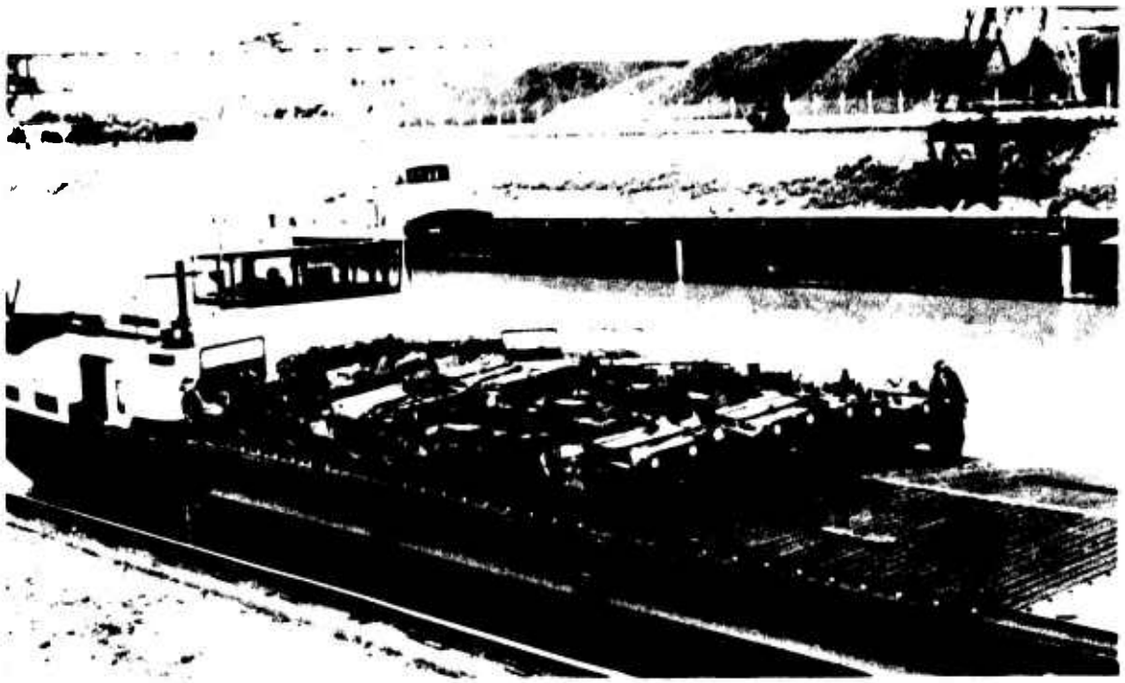

Figure 11-14. Cargo on barge hatch covers.

Figure 11-15. Gama Goats in barge.

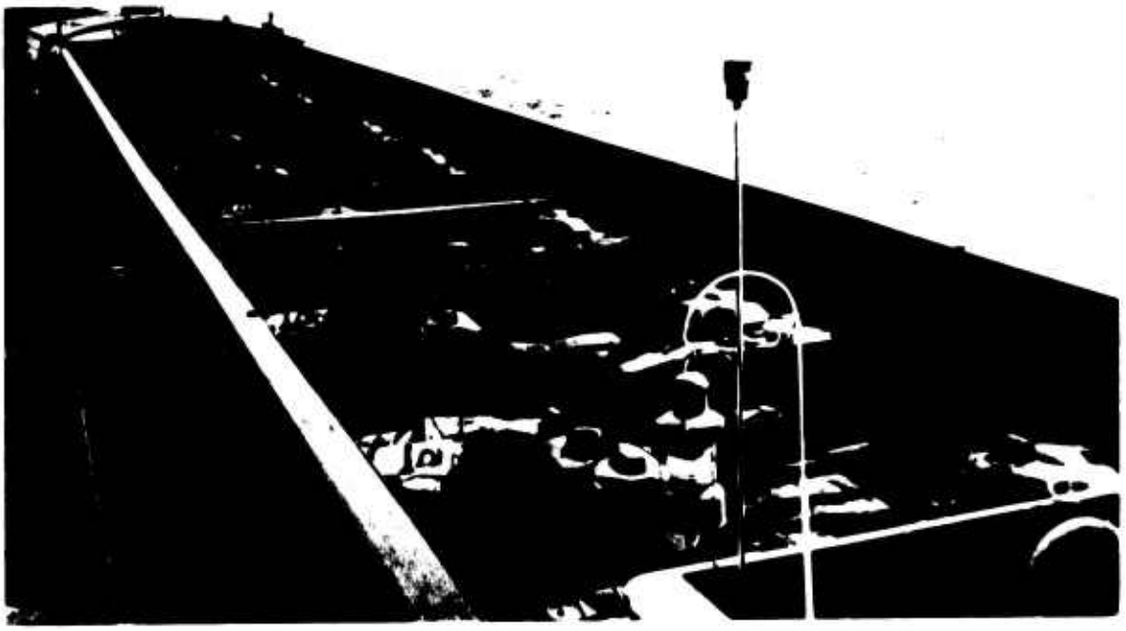

Figure 11-16. M-60 in barge.

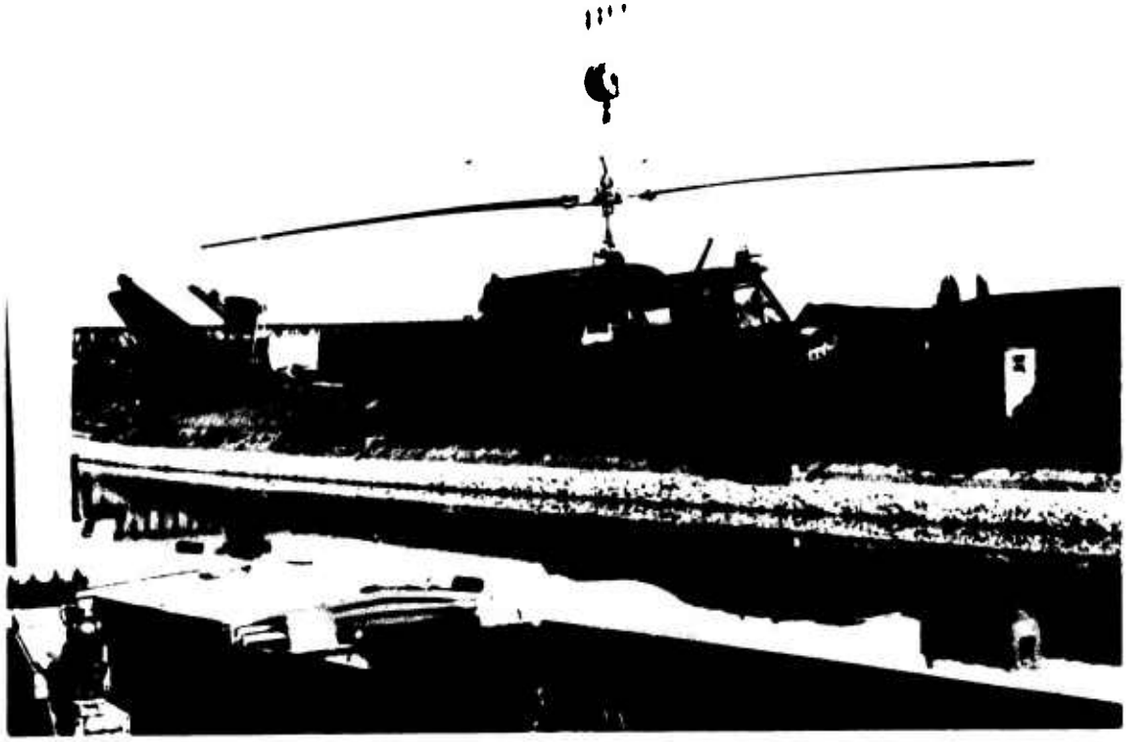

Figure 11-17. Helicopters loading aboard barge.

Figure 11-18. Helicopters loading aboard barge.

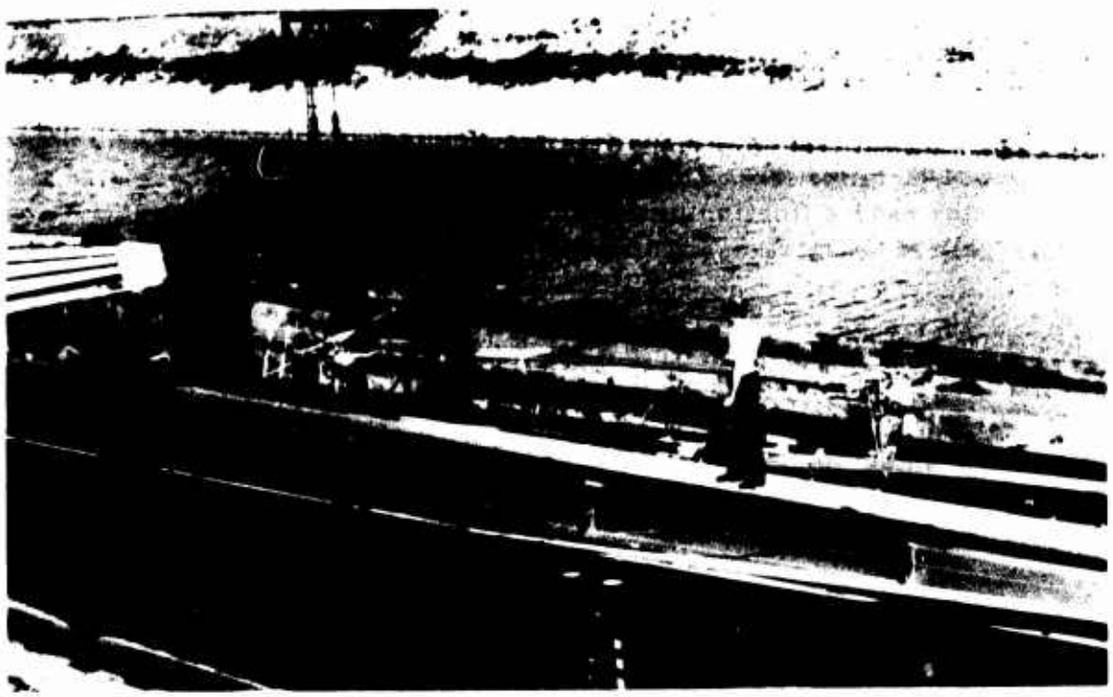

Figure 11-19. Helicopters loading aboard barge.

(2) A unit representative must be present at the barge site to provide timely cargo information as required by terminal operators.

(3) Closer coordination of cargo arrival times at the barge sites, between Rhine River Terminal and redeploying units/4th Transportation Brigade, is required to avoid contractor standby time.

3. Rotterdam SPOE operations.

a. The MTMC BENELUX terminal was responsible for REFORGER 77 cargo receipt and staging at Rotterdam and the subsequent loading of REFORGER cargo on the SS Washington (fig 11-20).

b. The 12 barges loaded with REFORGER 77 cargo arrived in Rotterdam between 6 and 10 October 1977.

c. The SS Washington berthed at 1730 hours, 7 October 1977, at the Uniport Stevedore Company berth in Rotterdam (fig 11-21). Loading operations commenced at 0730 hours, 8 October 1977, and were completed at 0050 hours, 12 October 1977. The SS Washington was loaded in 40 working hours.

d. The original concept was to load all cargo directly from barge to ship; however, at the discretion of the contractor, some cargo was unloaded from the barges onto the shore. (This did not result in any extra cost to the US Government.) A 46-metric-ton quay qantry crane was unable to lift M-60 tanks from outboard barges to the ship; consequently, the contractor used a floating crane to discharge M-60 tanks from barge to ship, again at no extra cost to the US Government (fig 11-22).

e. Ship's gear was utilized to load some non-heavy-lift cargo. While not a problem during REFORGER 77, the two deck-mounted cranes could not be operated in tandem due to vessel electrical power limitations.

f. The ships' deck tiedown fittings (D-rings) were frozen in place (by rust and paint) and to loosen them prior to use required considerable effort.

g. The SS Washington was loaded according to the prestow plan developed by MTMCEA (figs 11-23 through 11-25). While this stow plan proved accurate, minor alterations were made by BENELUX Terminal personnel to facilitate loading and to make maximum use of empty cargo space in trucks and trailers. All vehicles and trailers were secured with Peck and Hale gear. CONEXs were secured with 5/8-inch wire rope and turnbuckles. (The wire rope was laced through the lifting eyes of the

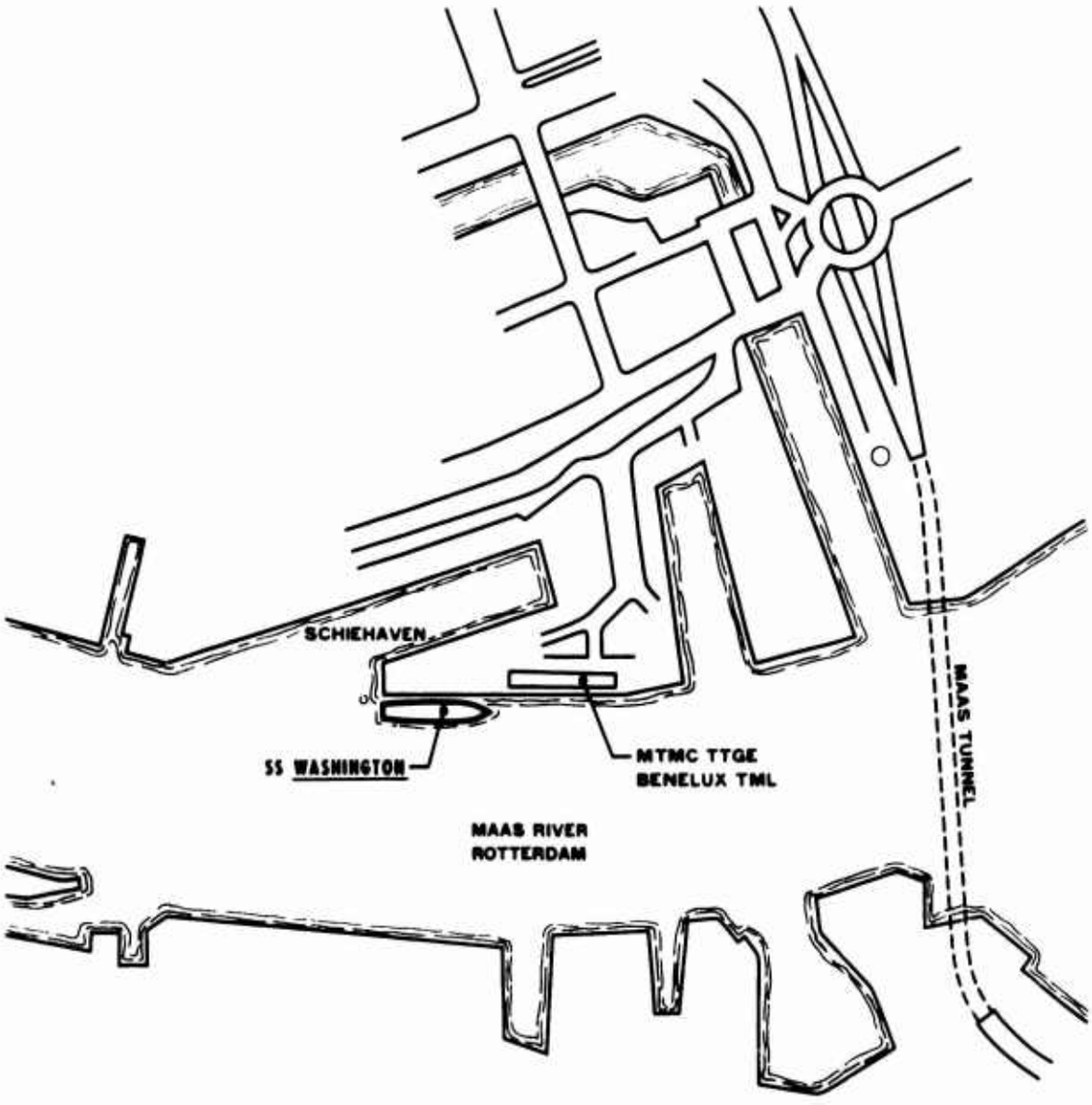

Figure 11-20. Rotterdam port complex.

Figure 11-21. SS Washington on berth at Rotterdam.

Figure 11-22. Floating crane loading tanks at Rotterdam.

Figure 11-23. SS Washington tank top stow.

Figure 11-24. SS Washington tween deck stow.

Figure 11-25. SS Washington main deck stow.

CONEXs and secured to deck tiedown fittings on both sides. In addition, Peck and Hale gear was attached to the outside CONEX and secured to the deck.) Cargo was loaded with minimum damage; in particular, the M-60 tanks and the three helicopters were meticulously handled. As a result of the tight stow achieved on the SS Washington, some space on the spar deck remained after all cargo had been loaded. Supervision of loading operations by MTMC BENELUX Terminal personnel was outstanding.

h. It was noted that, for future M-60 tank stowage on Seatrain Puerto Rico class ships, tanks could be stowed three abreast on the tank top and tween decks. This precludes side tiedowns, but blocking between tanks and the bulkhead would provide sufficient security.

4. Bremerhaven SPOE operations.

a. The MTMC TTGE Bremerhaven Terminal was responsible for the receipt and staging of REFORGER 77 cargo and subsequent loading of the REFORGER cargo on the GTS Callaghan (fig 11-26).

b. All cargo was received by rail from Boeblingen, the final clearing site. Fourteen special trains (436 railcars) carrying REFORGER cargo arrived between 25 September 1977 and 7 October 1977.

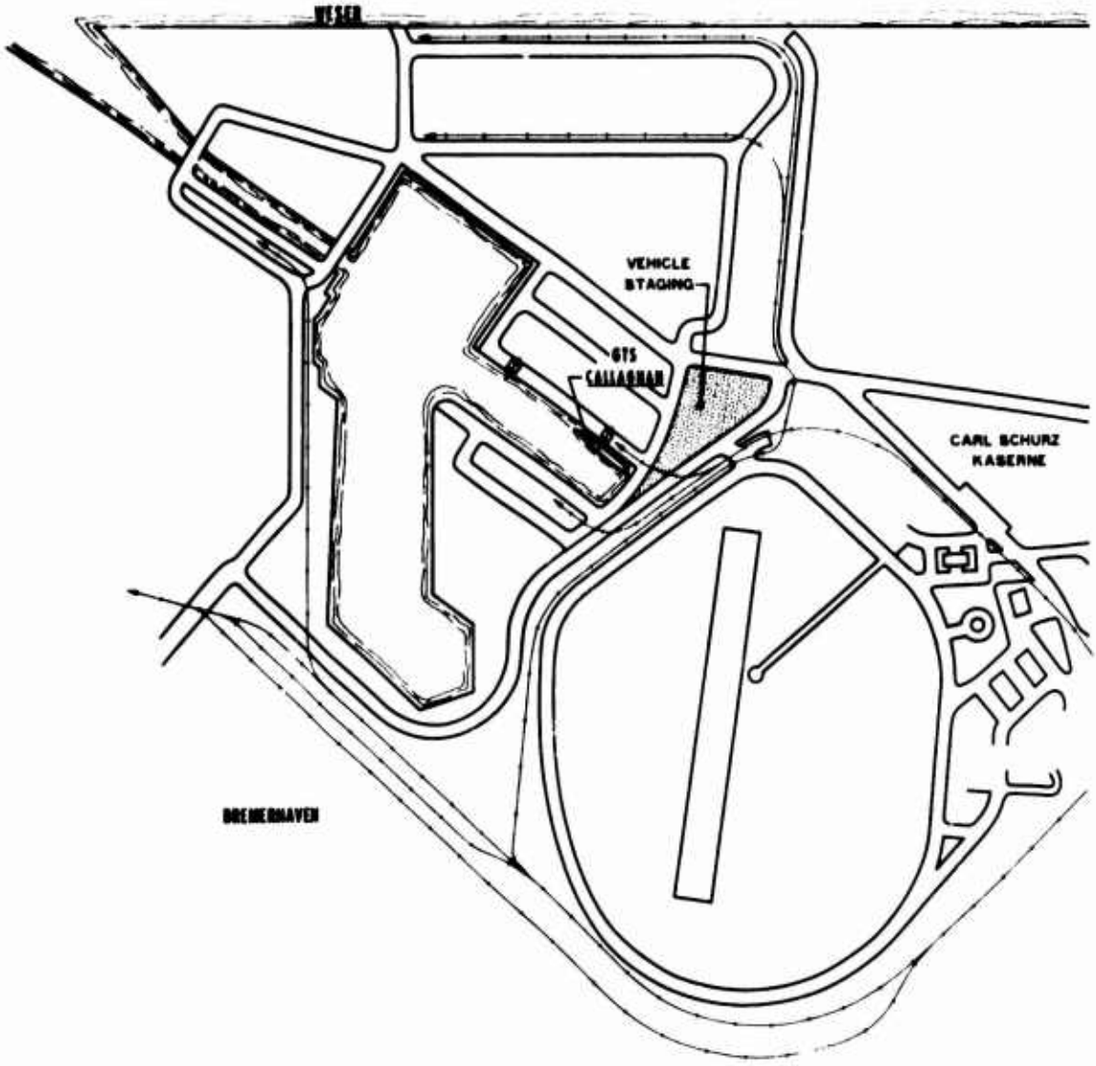

Figure 11-26. Bremerhaven port complex.

c. The GTS Callaghan (fig 11-27) berthed at the Nordhaven dock in Bremerhaven on 4 October 1977 at 1200 hours. Loading operations commenced at 1100 hours, 6 October and were completed at 2130 hours, 8 October 1977. The GTS Callaghan (fig 11-28) was loaded in 59 working hours.

d. The MTMC Bremerhaven Terminal Midgard and Bremer Lagerhaus Gesellschaft (BLG) stevedore/longshoring contract was used for REFORGER redeployment operations.

Figure 11-27. GTS Callaghan on berth at Bremerhaven.

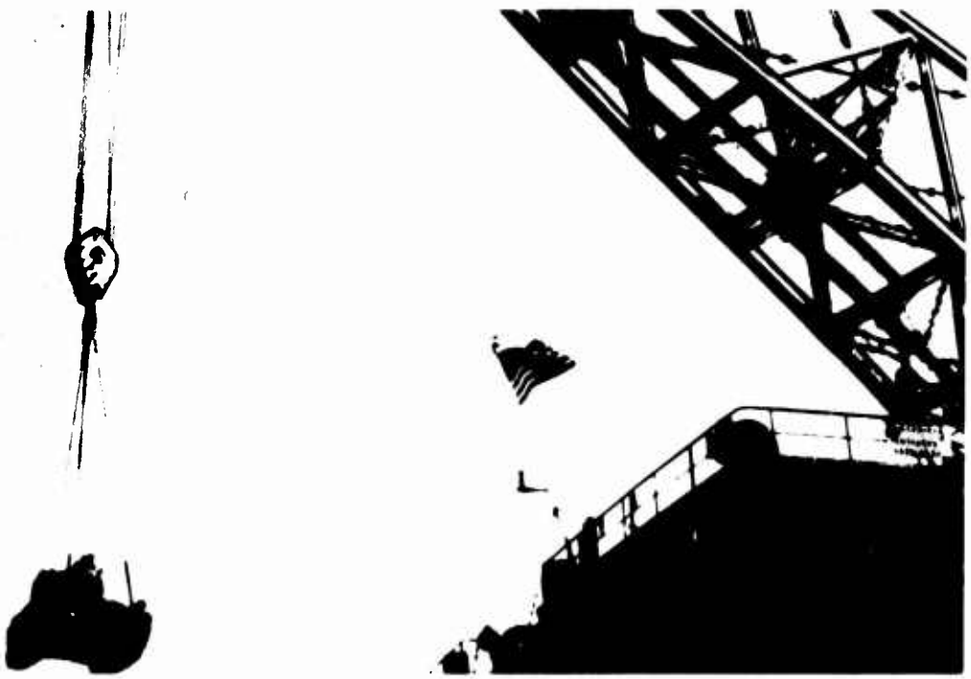

Figure 11-28. Loading operations at Bremerhaven.

e. The same prestow plan used for deployment was utilized to load the GTS Callaghan during redeployment (figs 11-29 and 11-30). The plan was not followed on the upper tween and main decks due to the number of disabled tracked vehicles and unpurged GOER fuel trucks and 5,000-gallon tankers that required main deck stowage.

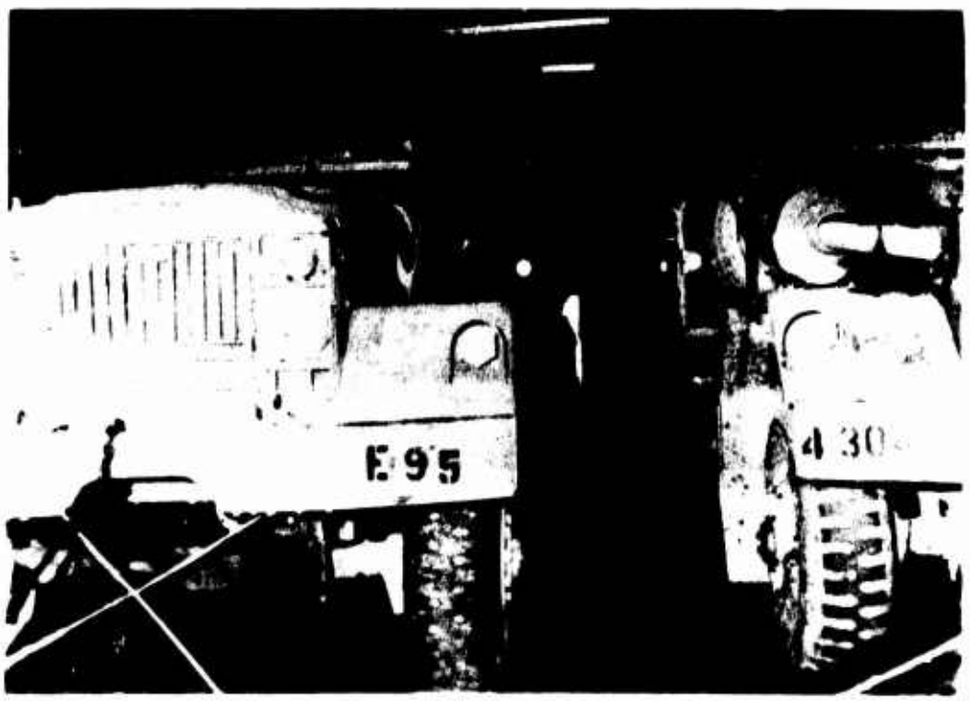

Figure 11-29. GTS Callaghan stow.

f. Loading operations were hampered by restricted staging space, a lack of information concerning train consists and arrivals, and marginal stow procedures on the upper decks.

(1) The lack of staging space, due to an overflow of other than REFORGER cargo (POVs and containers) in the port, prevented the unloading of some railcars until late in the shiploading operation; hence, the terminal operators were unable to select equipment for loading in the sequence and by the type desired (fig 11-31).

(2) A breakdown occurred in communication of information on train consist and arrival times from the 4th Transportation Brigade Movements Office to the Bremerhaven Terminal; this hampered loading operations. Thirty-one railcars arrived with REFORGER cargo after the terminal had been notified that the last train had arrived. Had terminal operators recorded the number and type of equipment as it arrived at the

Figure 11-30. GTS Callaghan stow.

terminal, appropriate action could have been initiated to locate the remaining cargo prior to finalizing ship loading.

(3) Tanks stowed on the upper tween deck did not maximize use of cargo stowage space. Too much space was left between tanks for fore-and-aft tiedowns. (Tanks can be stowed with the gun tube almost touching the bustle rack of the tank in front, or with gun tubes overlapping or, if necessary, with the gun tubes raised.)

(4) Empty truckbed space was not utilized to stow trailers or 1/4-ton trucks; also, empty M-105 1-1/2-ton trailers were not banded together. Both or these methods maximize use of cargo stow space.

g. At the master's request, due to anticipated sea conditions, the GTS Callaghan was stowed bow-heavy for the redeployment voyage (October), versus stern-heavy for the deployment voyage (August).

h. For the reasons stated in the preceding paragraph, nine vehicles (five trucks and four trailers) and one CONEX that were sent erroneously to Bremerhaven could not be loaded on the GTS Callaghan. The decision was made not to attempt to restow the GTS Callaghan to accommodate the

10 pieces, due to the added ship per diem costs that would be incurred and to the cost and questionable availability of stevedore gangs on Sunday, 9 October 1977. This equipment was therefore shipped on the USNS Towle, which departed 16 October 1977.

Figure 11-31. GTS Callaghan staging area.

5. Summary.

a. The concept of employing barges in a REFORGER exercise proved to be efficient and cost effective. Barge loading was conducted without accidents or damage. No damage resulted during the voyage down the Rhine River to Rotterdam. Supervision of the overall operation, from planning through execution, by RRT personnel was outstanding.

b. Operations during shiploading at Rotterdam were most efficient and effective due to detailed planning and excellent supervision of loading operations by BENELUX Terminal personnel. Prestow planning proved accurate, with further improvements possible for tank stowage in the tank top and tween decks. The ship's condition caused some lashing problems; for example, "frozen" tiedown fittings.

c. Shiploading operations at Breherhaven, while initially hampered by several external problems, flowed smoothly; however, necessary adjustments to prestow plans prohibited loading all planned cargo. Factors such as a late Saturday night completion of stow, nonavailability of Sunday labor, and added ship per diem cost militated against restowing the GTS Callaghan. Frustrated cargo was subsequently shipped in time to meet scheduled rail departures.

d. Areas requiring attention.

(1) Accurate weighing and marking of containers should be emphasized.

(2) Unit representatives must be available at outloading terminals.

(3) In-theater movement control procedures must be strengthened.

(4) All ship's lashing facilities must be usable.

(5) Onboard ship's gear must be maintained in a fully operable condition.

(6) Adjustments to prestow plans must be carefully reviewed to insure acceptance of all programed cargo.

SECTION XII

CONUS SPOD OPERATIONS

1. General.

a. The Military Ocean Terminal, Bayonne, New Jersey, was utilized as the port of discharge for the GTS Callaghan, and the port of Beaumont, Texas, was used for SS Washington discharge.

b. MTMCEA established a REFORGER operations center at both ports during the period that ship discharge and port clearance operations were being performed. Daily operational meetings were conducted to keep all exercise participants informed of the progress of SPOD operations, resolve problem areas, and review planned work scheduled. The REFORGER operations center at MOTBY served as the primary operations center and performed all monitoring functions for CONUS surface movements until all REFORGER 77 cargo was returned to home station.

2. SPOD Operations at MOTBY.

a. Ship discharge:

(1) The GTS Callaghan arrived on berth at 1118 hours, 17 October 1977, and commenced discharge operations at 1300 hours. Ship discharge was completed at 1115 hours, 19 October 1977, utilizing 22 working hours.

(2) The USNS Towle, carrying 10 pieces of REFORGER 77 equipment in addition to its non-REFORGER cargo, arrived on berth at MOTBY at 1200 hours, 26 October 1977. The REFORGER 77 equipment was discharged and moved to the appropriate staging areas for rail loading to Forts Carson and Riley. The delayed arrival of the 10 pieces of REFORGER 77 cargo had no major impact on SPOD operations at MOTBY.

(3) REFORGER 77 equipment was driven off the GTS Callaghan through the stern and aft side ramps (figs 12-1 and 12-2). CONEXs at hatch number 1 and nonwheeled cargo on the main deck were lifted off, using ship's gear. Disabled vehicles both tracked and wheeled, stowed on the main deck, were lifted off onto barges, using a floating crane (fig 12-3).

(4) Roll-off operations were initially hampered as vehicles and trailers were loaded on the stern ramp and number 6 upper tween deck requiring that they be backed off during discharge (fig 12-4). During

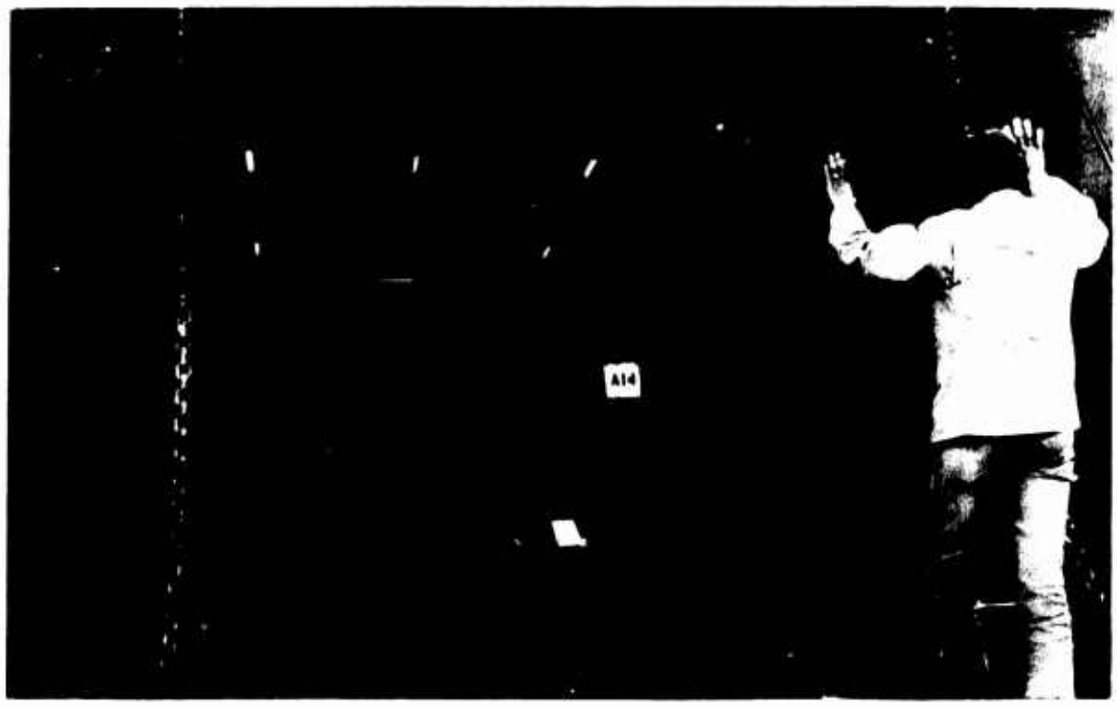

Figure 12-1. Tank drive-off from GTS Callaghan, stern ramp.

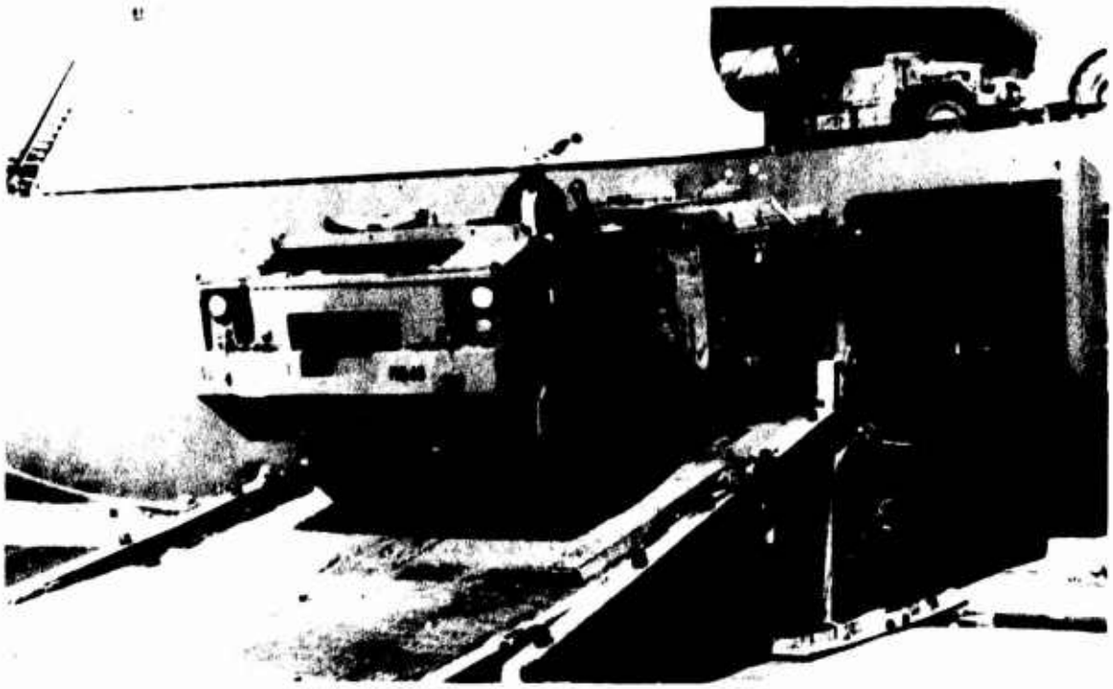

Figure 12-2. GOER drive-off GTS Callaghan side ramp.

Figure 12-3. Floating crane discharge to barge.

Figure 12-4. Stowage of vehicles on GTS Callaghan stern ramp.

backing operations, due to a brake failure, one M-52 5-ton tractor with an M-750 shop van "jack-knifed" on the stern ramp, resulting in minor damage to the van. Damage to the 5-ton tractor front bumper occurred while attempting to "right" the vehicles.

b. Staging operations:

(1) Berthing and staging areas used for redeployment of GTS Callaghan cargo were the same as the ones used during the deployment phase. MOTBY developed a staging plan that segregated cargo by destination and type of equipment. Staging in accordance with this procedure proved effective. A special effort was made to insure that cargo was loaded for shipment to the proper destination. This involved the following checks:

(a) Visual checks of unit-applied "yellow chalk" destination markings.

(b) Comparison of Unit Identification Code (UIC) within the prestenciled TCN, used on each piece of equipment during the deployment phase, against the exercise equipment list.

(c) Reverification by MOTBY documentation personnel of equipment destinations and, at the same time, documentation of each piece of redeploying cargo.

(2) Adequate separation of the equipment staging areas by destination to preclude accidental mixing of equipment during rail outloading operations.

c. Port clearance operations by highway:

(1) Eight redeploying REFORGER 77 vehicles (four M-880 with signal shelters and four 1/4-ton trailers with power generators) required special handling for participation in exercise "Devil Strike" at Fort Irwin, California. This equipment was expeditiously discharged, and loaded onto four Leonard Brothers commercial trucks, which departed MOTBY at 1145 hours, 18 October 1977 and arrived at Fort Irwin on 25 October 1977, well within the established desired delivery dates.

(2) Commercial highway assets were also used to clear two M-880 vehicles from the port for Fort Jackson, South Carolina, the only REFORGER 77 equipment programed for that destination. Leonard Brothers was the carrier, with one truck departing MOTBY at 1800 hours,

18 October 1977 and arriving at Fort Jackson at 0600 hours, 20 October 1977, within the desired delivery time.

d. Rail outloading operations.

(1) MOTBY rail loading of REFORGER 77 cargo and equipment for the return to Forts Carson and Riley commenced at 1400 hours, 18 October 1977, and was completed at 1600 hours, on 28 October 1977.

(2) REFORGER 77 cargo and equipment was loaded and secured on railcars by stevedores of the Universal Stevedore Company, using the following methods:

(a) M-60 tanks, M-88 tank retrievers, and M-113 personnel carriers were lifted using a mobile crane onto prechalked railcars (figs 12-5 through 12-7). The lift-on method was necessary for the heavier M-60 and M-88 tracked vehicles, since MOTBY did not have a permanent or reinforced railcar end-loading ramp, although an end-loading ramp (fig 12-8) of sufficient strength and width was available to permit drive-on loading operations for M-113 personnel carriers and similar tracked vehicles. The decision was also made to load these lighter tracked vehicles by the lift-on method.

(b) CONEX and non-wheel-mounted cargo were loaded into gondola railcars using a mobile crane.

(c) Wheeled vehicles were driven onto flatcars using a portable end-loading ramp and sufficient railcar spanners to facilitate an efficient loading operation (fig 12-9).

(3) Special attention was given to insure that deployment lessons learned during redeployment were applied to equipment tiedown procedures, adequate banding, and proper loading of CONEXs in gondola cars. The blocking of cargo in gondola cars, loading CONEX door-to-door, and the use of turnbuckles and cable thimbles greatly enhanced the railcar securing effort. Many of the vehicles, both wheeled and tracked, were not equipped with tiedown shackles. As a result, the stevedores attempted to secure equipment at improper tiedown points. The problem was resolved by fabricating a shackle of 5/8-inch wire rope in a continuous loop to replace the missing shackles (fig 12-10).

3. SPOD operations at Beaumont.

a. MTMCEA Gulf Outport was the overall coordinator for the discharge, staging, and onward movement of REFORGER 77 equipment aboard

Figure 12-5. M-60 loading onto railcar.

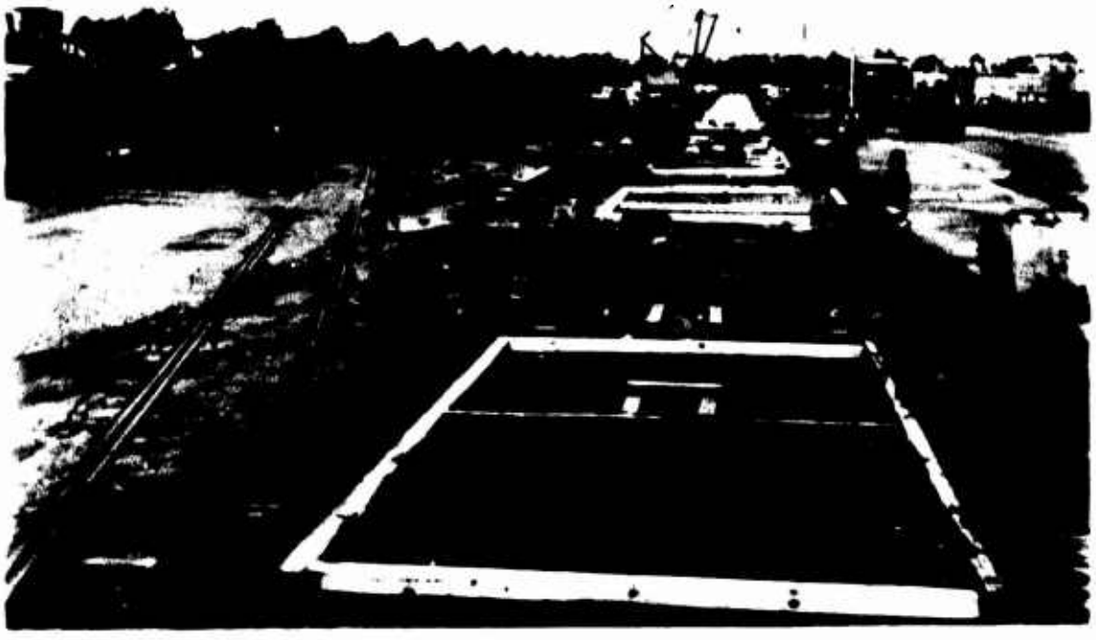

Figure 12-6. Prechalked railcars.

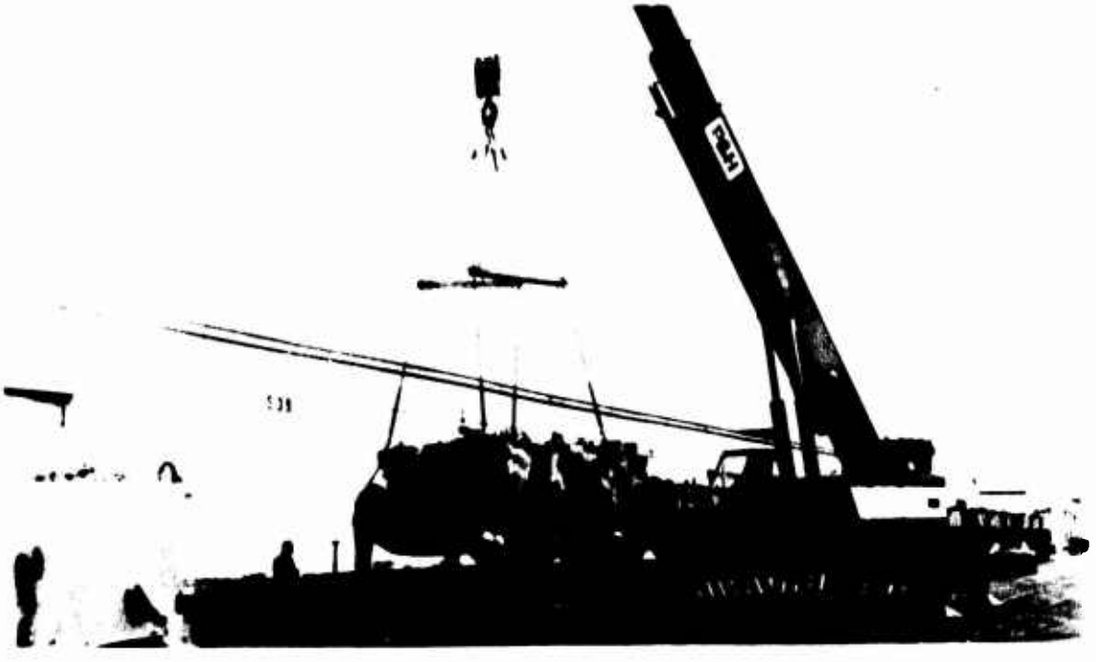

Figure 12-7. M-113 loading onto railcar.

Figure 12-8. Portable end-loading ramp.

Figure 12-9. Wheeled vehicle loading onto flatcars.

Figure 12-10. Fabricated shackles made of 5/8-inch wire rope.

the SS Washington. Specific duties were performed by the Beaumont Port Detachment, the 1st COSCOM port support personnel, and unit personnel. MTMCEA monitored the operation with an onsite management team.

b. Beaumont port facilities are indicated in figure 12-11.

c. Ship discharge was as follows:

(1) The SS Washington arrived on berth at 0035 hours, 6 November 1977, and commenced discharge at 0800 hours (fig 12-12). Ship discharge was completed at 1700 hours, 9 November 1977, utilizing 33 working hours (excluding meal hours).

(2) Stevedore gangs worked as follows:

Date	Gangs	Hours
6 November 1977	2	0800 - 1800
7 November 1977	2	0800 - 1700
	1	1700 - 2100
8 November 1977	1	0800 - 1400
9 November 1977	1	0800 - 1700

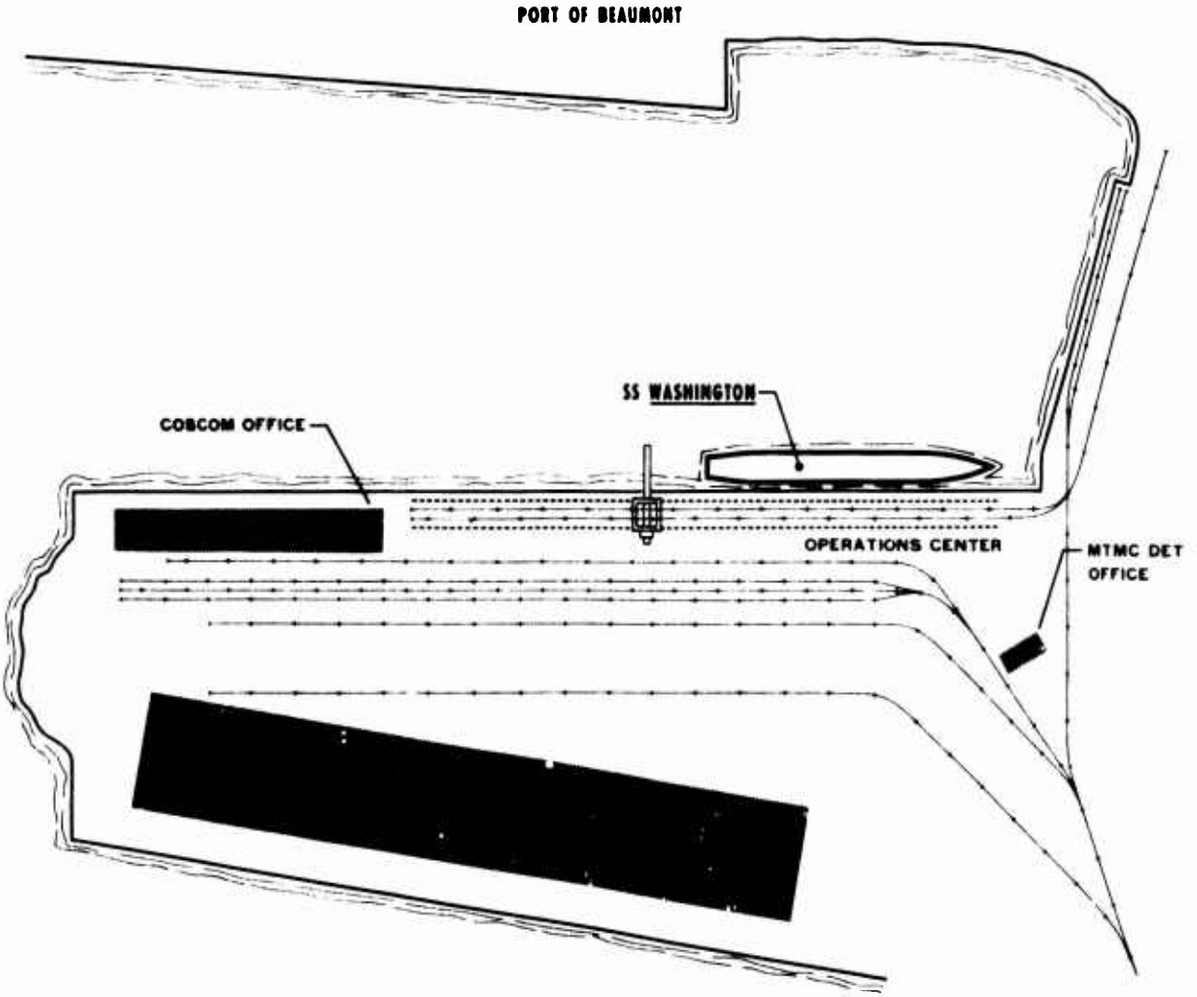

Figure 12-11. Beaumont port facilities.

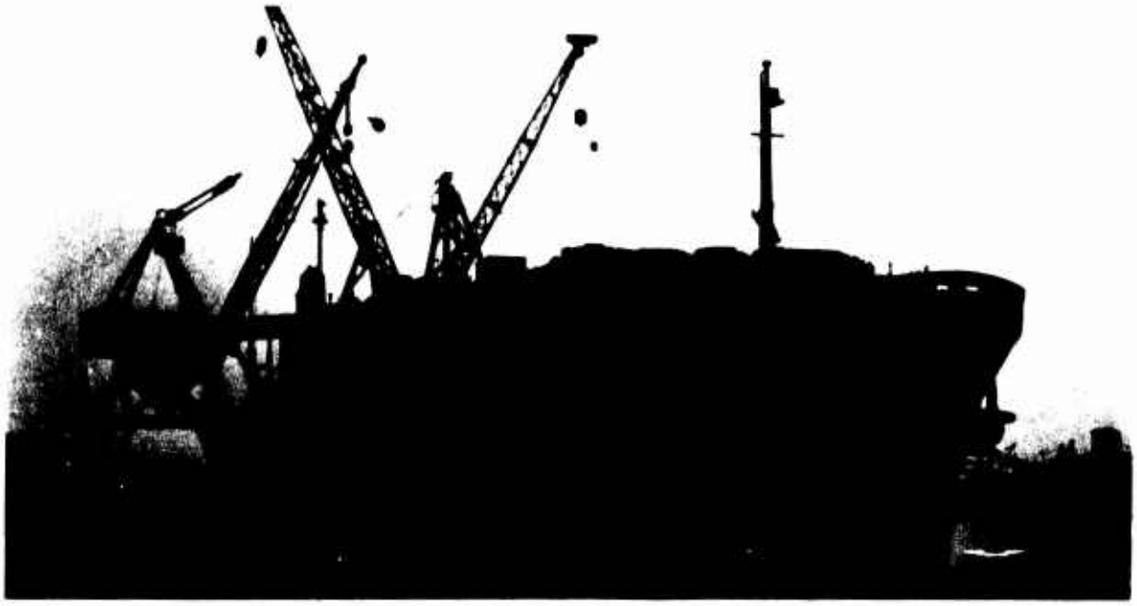

Figure 12-12. SS Washington on berth.

(3) REFORGER 77 equipment was discharged from the spar deck by one gang using the gantry crane while main deck equipment was discharged by the second gang using the ship's crane (fig 12-13). After equipment was cleared from the spar and main decks, only one gang was employed to discharge cargo from the tween deck and tank top (fig 12-14).

(4) Ship discharge was conducted without incident. The contractor provided lifting gear (slings, spreader bars, and straps) to discharge the equipment without damage.

(5) A considerable effort was made by the Beaumont Port Detachment to identify cargo damage. Cargo damage assessment teams photographed, marked, and documented the condition of all cargo prior to stevedore handling.

(6) The heavy seas encountered by the SS Washington on 16 to 17 October 1977 caused cargo tiedown gear and deck tiedown fixtures to break. As a result, four pieces of equipment were lost at sea (one M-35 2-1/2-ton truck, one M-151 1/4-ton truck, and two CONEXs, one of which contained sensitive weapons). In addition, four CONEXs and twelve 1/4-ton trucks were severely damaged. Ten of these 1/4-ton trucks were identified by 1st COSCOM inspection teams as uneconomically reparable.

Figure 12-13. Discharge using ships' cranes and gantry crane.

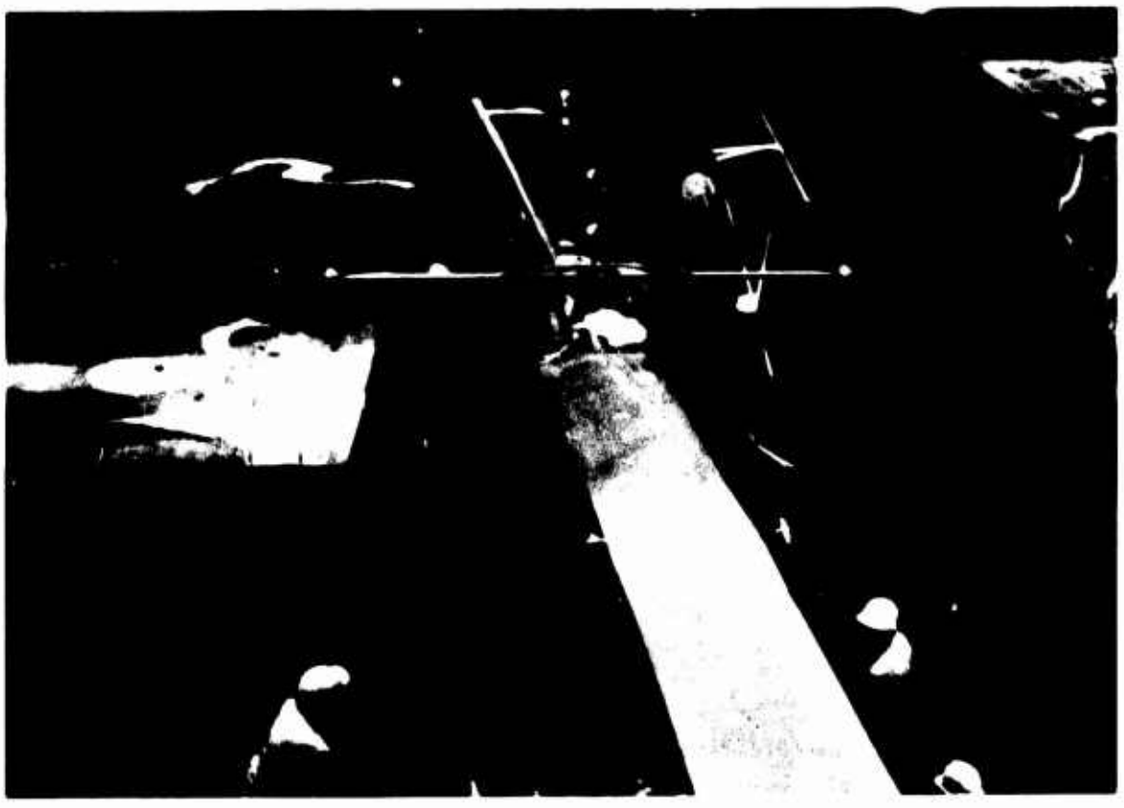

Figure 12-14. Discharge of helicopters from SS Washington tween deck.

(7) MTMC port personnel specifically identified the equipment that was lost at sea and arranged for the unit to repack contents of four CONEXs in replacement CONEXs. All damaged equipment was returned to home station at unit request.

d. Staging operations were as follows:

(1) Equipment was staged by destination and type. Sensitive equipment was separately staged and guarded.

(2) Heavy equipment (M-60 tanks and recovery vehicles) was loaded directly to DODX 100-ton railcars (fig 12-15). Ship discharge was slowed somewhat by direct-to-railcar discharge; however, an overall time saving was realized since only one handling of tanks and recovery vehicles was necessary.

(3) TOW carriers were loaded directly to awaiting commercial highway trucks (fig 12-16).

e. Port clearance operations were as follows:

(1) REFORGER 77 equipment was cleared from the port by rail, commercial highway, and self-deployment.

(2) Fort Carson equipment was loaded on one 88-car train.

(a) Vehicular rail outloading on bilevel (fig 12-17) and dunnage-free, chain-tiedown flatcars progressed simultaneously with vessel discharge (fig 12-18). Not all chain-tiedown cars were adequately equipped with tiedown devices. Railroad officials procured the additional necessary equipment, and auxiliary wire safety tiedowns were applied by port personnel.

(b) Heavy equipment was placed directly onto prechalked railcars (fig 12-19). This procedure improved railcar loading and securing operations.

(c) Coordination between MTMC personnel and railroad officials was excellent.

(d) Improper securement of general cargo and haphazard loading by the units of vehicular equipment into vehicle and trailer space resulted in extra longshoring costs at Beaumont. Rail inspectors would not approve loads until loose equipment was secured (fig 12-20).

Figure 12-15. Direct ship-to-railcar discharge.

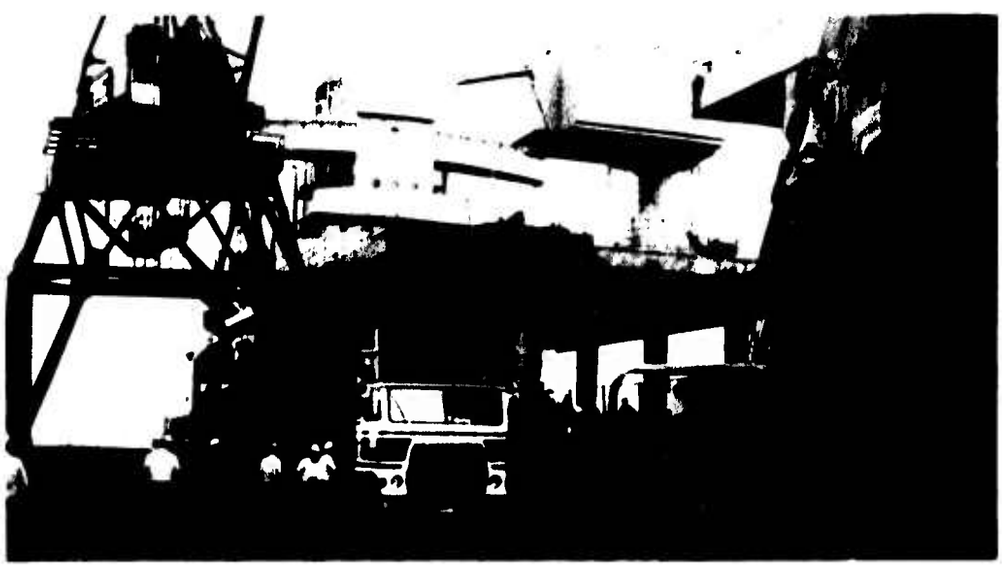

Figure 12-16. Direct ship-to-truck discharge.

Figure 12-17. Railcar loads at Beaumont.

Figure 12-18. Railcar loads at Beaumont.

Figure 12-19. Loose equipment stowed in cargo bed.

Figure 12-20. M-60 loading on prechalked DODX cars.

(3) Twenty-two commercial highway trucks were utilized to deliver equipment to Forts Bliss (11 trucks), Hood (10 trucks), and Campbell (1 truck). Loading operations were conducted without incident.

(4) Three UH-1 helicopters were self-deployed to Fort Hood after inspection and a test flight.

(5) The helicopters were self-deployed on 9 November 1977, commercial trucks departed the port between 7 and 11 November 1977, and port clearance was complete with the departure of the train at 1015 hours on 11 November 1977.

f. The late arrival of the SS Washington resulted in railcars demurrage accruing; however, MTMC reached an agreement with the railroad representatives to minimize this demurrage by delaying demurrage start-time until 31 October 1977. The alternative was to release the special-purpose railcars to the railroad without a guarantee that these MTMC-desired railcars could again be provided.

g. The identification of sensitive and classified equipment was again a problem. Despite assurances in Europe from unit personnel to MTMC TTGE that this equipment was properly identified, electrical equipment shelters were shipped containing classified material. Hence, a chain of custody was not maintained in accordance with DOD Regulation 5200.1-R. In addition, the CONEX containing the TOW carrier missile guidance system was not identified as sensitive in accordance with AR 190-49. These shipping discrepancies were corrected at Beaumont, and the appropriate discrepancy report prepared.

h. A commercial caboose was added to the Fort Carson train for guard comfort as the DODX guard car heater was inoperable.

4. Summary of CONUS SPOD operations.

a. Redeployment SPOD operations at MOTBY and Beaumont were successfully conducted The operations were characterized by professionalism and dedication on the part of all participants.

b. Port organization and responsibilities were clearly defined. Operations were well coordinated and problem areas corrected as they occurred.

c. Damage to equipment during port handling was minimal.

d. Lessons learned during the deployment phase were given special attention; in particular, improving the securing of equipment on railcars.

e. Proper identification, documentation and control of sensitive and classified cargo at unit level continued to be a problem.

f. MOTBY should procure a railcar end-loading ramp of sufficient strength to allow drive-on of heavy tracked vehicles.

SECTION XIII

CONUS LINE-HAUL TO HOME STATION

1. General.

a. MTMCEA developed a redeployment movement plan using rail, highway, and fly-away of aircraft to clear REFORGER 77 equipment from the ports of discharge to home station. The plan for CONUS rail movement involved the use of four special trains from MOTBY and one from Beaumont. Highway line-haul requirements, which were reduced below deployment requirements due to consolidations possible with higher intrastate load limits, involved 5 commercial trucks from MOTBY and 24 from Beaumont. Three helicopters self-deployed from Beaumont to Fort Hood.

b. A redeployment rail planning conference was held on 22 September 1977 by MTMCEA with representatives present from the participating railroads and the military commands concerned. During the conference, three significant actions were finalized.

(1) The redeployment schedule was reviewed and confirmed.

(2) CONUS SPOD operations were explained and finalized.

(3) Rail redeployment equipment requirements were identified and confirmed.

2. CONUS line haul MOTBY to home station.

a. Highway movement.

(1) Commercial highway movements originating at MOTBY consisted of four trucks transporting equipment to Fort Irwin, California, for exercise "Devil Strike," and one truck to Fort Jackson, South Carolina. These trucks moved as follows:

No. of trucks	Destination	Departed	Arrived
4	Fort Irwin	181145 Oct 77	250800 Oct 77
1	Fort Jackson	181800 Oct 77	200600 Oct 77

(2) MTMCEA monitored highway movements from MOTBY on an exception basis in view of the limited number of trucks involved.

b. Rail movement.

(1) Rail communications net.

(a) Rail movement status charts were maintained at the MTMCEA REFORGER operations center to facilitate control and to aid in monitoring the progress of rail movement to Forts Carson and Riley.

(b) A telephone communications net was established. Information concerning train locations was received at MTMCEA as each train passed through specified checkpoints, as indicated at figures 13-1 through 13-3. As was experienced during the deployment phase, the flow of communications between the rail carriers and MOTBY was excellent.

(2) Rail operations.

(a) Rail movements consisted of four special trains originating at MOTBY; three destined for Fort Carson, Colorado, and one destined for Fort Riley, Kansas. Specific rail movement data are presented in table 13-1.

(b) The progress of trains 3 and 4 was slower than programed, resulting in delayed arrivals at destination. These delays were caused by a locomotive breakdown, an en route stop for locomotive servicing, pick-up of previously set-aside railcars, and a routing adjustment necessitated by blocked trackage due to a non-REFORGER derailment on the planned route. No significant problems arose as a result of these delays.

(c) The makeup and cargo loads of the five trains originating at MOTBY are shown in table 13-2.

(d) MTMCEA inland traffic representatives were onsite at Forts Carson and Riley to observe the condition of REFORGER 77 equipment upon arrival of the trains. The following observations were made:

1. Some chain tiedowns in dunnage-free cars loosened en route. Loosening was caused most frequently by missing locking clips, which allowed screw barrels on tiedown devices to rotate under load. Figure 13-4 illustrates the distance a tiedown device loosened and the absence of a locking clip. (The left-hand device in figure 13-5 has a properly installed locking clip.) Regardless of loosened tiedowns, no apparent equipment damage resulted.

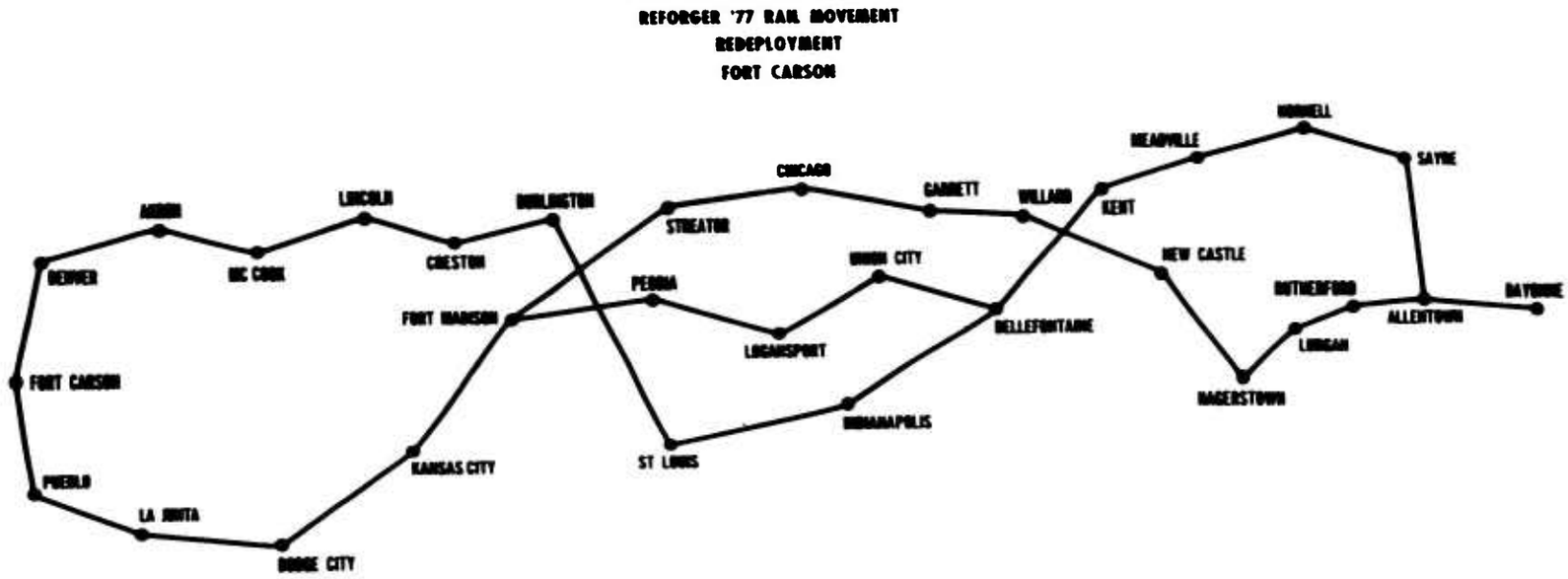

Figure 13-1. Rail routes to Fort Carson.

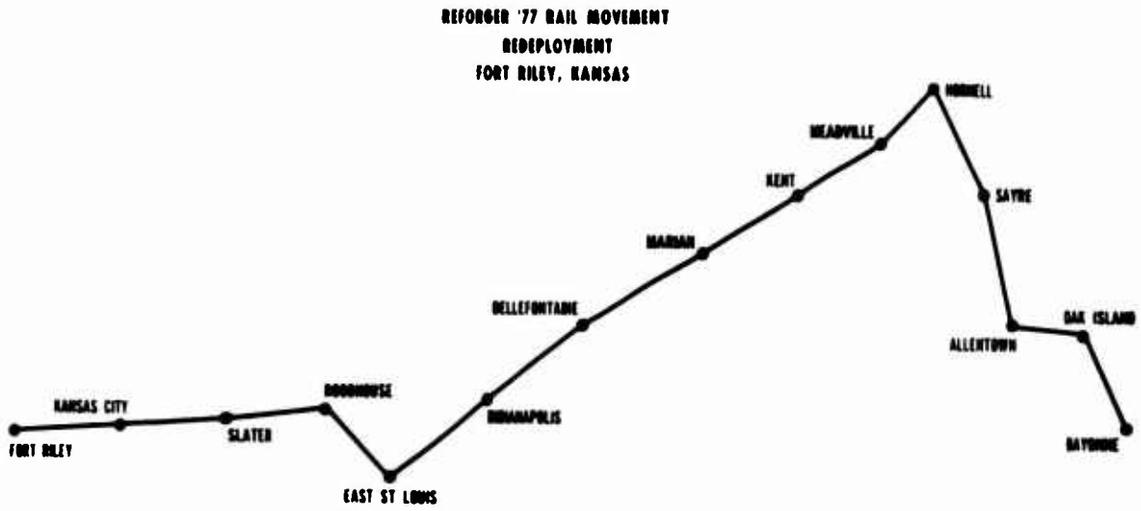

Figure 13-2. Rail route to Fort Riley.

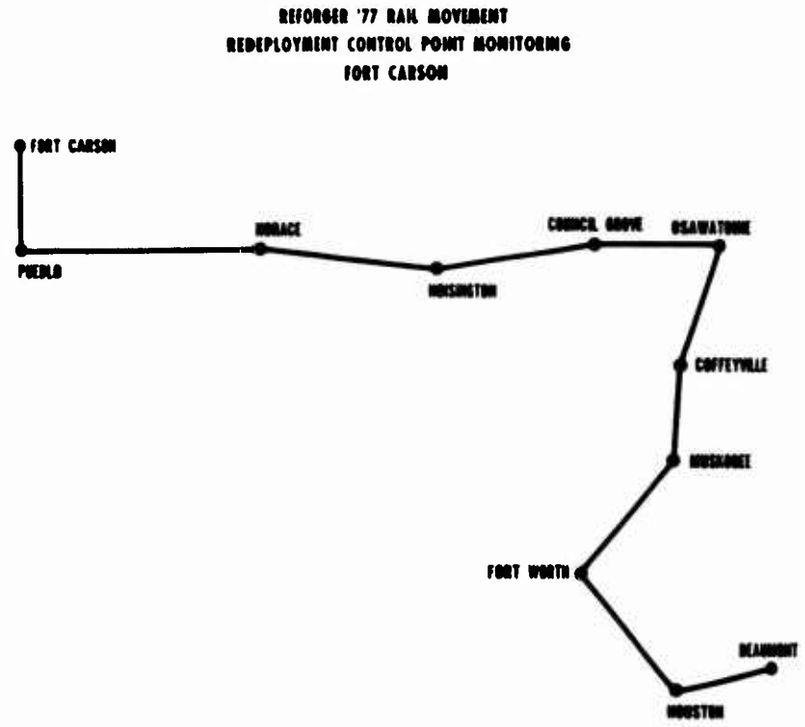

Figure 13-3. Rail route from Beaumont.

TABLE 13-1
CONUS RAIL MOVEMENTS FROM MOTBY TO HOME STATION

Train No.	Destination	Departed Planned/Actual	Arrived Planned/Actual	Transit time Planned/Actual
1	Fort Carson	262400 Oct/260900 Oct	302400 Oct/301201 Oct	96 hours/ 99.0 hours
2	Fort Riley	292400 Oct/280910 Oct	012400 Nov/310740 Oct	72 hours/ 70.5 hours
3	Fort Carson	012400 Nov/290830 Oct	052400 Oct/031540 Nov	96 hours/127.1 hours
4	Fort Carson	042400 Nov/010745 Nov	082400 Nov/060845 Nov	96 hours/121.0 hours

TABLE 13-2
MAKEUP AND CARGO LOADS OF TRAINS ORIGINATING AT MOTBY

Train No.	No. of cars			Consist				Total S/T
	DODX	Coml	Total	Veh	CONEX	M-60	Other	
1	18	51	69	136	0	32	82	2882.0
2	1	47	48	177	65	0	1	705.7
3	17	49	66	160	0	25	32	2390.3
4	14	52	66	159	1	25	33	2422.0

Figure 13-4. Loosened chain tiedown fitting.

Figure 13-5. A properly installed tiedown with locking clip.

2. Many of the thin strips of wood used as turnbuckle locking devices on tracked vehicle tiedowns (figure 13-6) broke during

Figure 13-6. Wood used for turnbuckle locking.

transit. As a result, the turnbuckles and tiedowns loosened slightly; however, no damage occurred as a result. (Wiring turnbuckles together at the point where they cross will preclude this problem.) Note: This procedure was employed on the Beaumont to Carson train (Figure 13-7).

Figure 13-7. Wired turnbuckles.

3. The only damage to REFORGER equipment during transit from MOTBY to home station was a broken windshield on one M-880 ambulance. This breakage was caused apparently by thrown rocks.

3. CONUS line haul from Beaumont.

a. Highway movement.

(1) Planned commercial highway movements originating at Beaumont, Texas, consisted of 24 trucks (Fort Bliss - 12, Fort Hood - 10, and Fort Campbell - 2). As a result of further load consolidations the

truck requirements for Forts Bliss and Campbell were reduced by one for each location. Truck departure and arrival times are shown in table 13-3.

TABLE 13-3
TRUCK DEPARTURE AND ARRIVAL TIMES

Trucks	Destination	Departure	Arrive home station
2	Fort Bliss	071030 Nov	090830 Nov
4	Fort Bliss	071500 Nov	090830 Nov
1	Fort Bliss	071645 Nov	101345 Nov
1	Fort Bliss	081530 Nov	101345 Nov
1*	Fort Bliss	081530 Nov	160830 Nov
1	Fort Bliss	091400 Nov	101345 Nov
1	Fort Hood	091310 Nov	100730 Nov
1*	Fort Hood	091310 Nov	150830 Nov
1*	Fort Hood	100900 Nov	151215 Nov
1	Fort Bliss	100900 Nov	110940 Nov
1	Fort Hood	100900 Nov	110730 Nov
1	Fort Hood	101400 Nov	110730 Nov
2	Fort Hood	110845 Nov	151400 Nov
2	Fort Hood	111230 Nov	140730 Nov
1	Fort Hood	111445 Nov	141115 Nov
1	Fort Campbell	091100 Nov	111110 Nov

*Fort Bliss truck experienced mechanical problems and the two Fort Hood trucks had outsized loads which could move only during daylight, weekday hours.

(2) The highway move utilized predesignated routes from Beaumont to home station (fig 13-8). The movement was monitored by MTMCEA REFORGER operations center at MOTBY, with twice daily reports identifying truck locations and resolving problems encountered during transit.

b. Rail movement.

(1) Rail movement from Beaumont, Texas, involved one special train consisting of 24 DODX and 64 commercial railcars transporting 3,181 short tons of cargo.

(2) The rail movement progress was monitored by the MTMCEA operations center, as previously discussed. The train departed Beaumont at 1245 hours, 11 November 1977, and arrived at Fort Carson at 1635 hours, 14 November 1977, approximately 1/2 hour later than the planned 76.5-hour transit time. This delay was caused by set-aside DODX cars; three for hot journal boxes, one for inoperative brakes, and one commercial

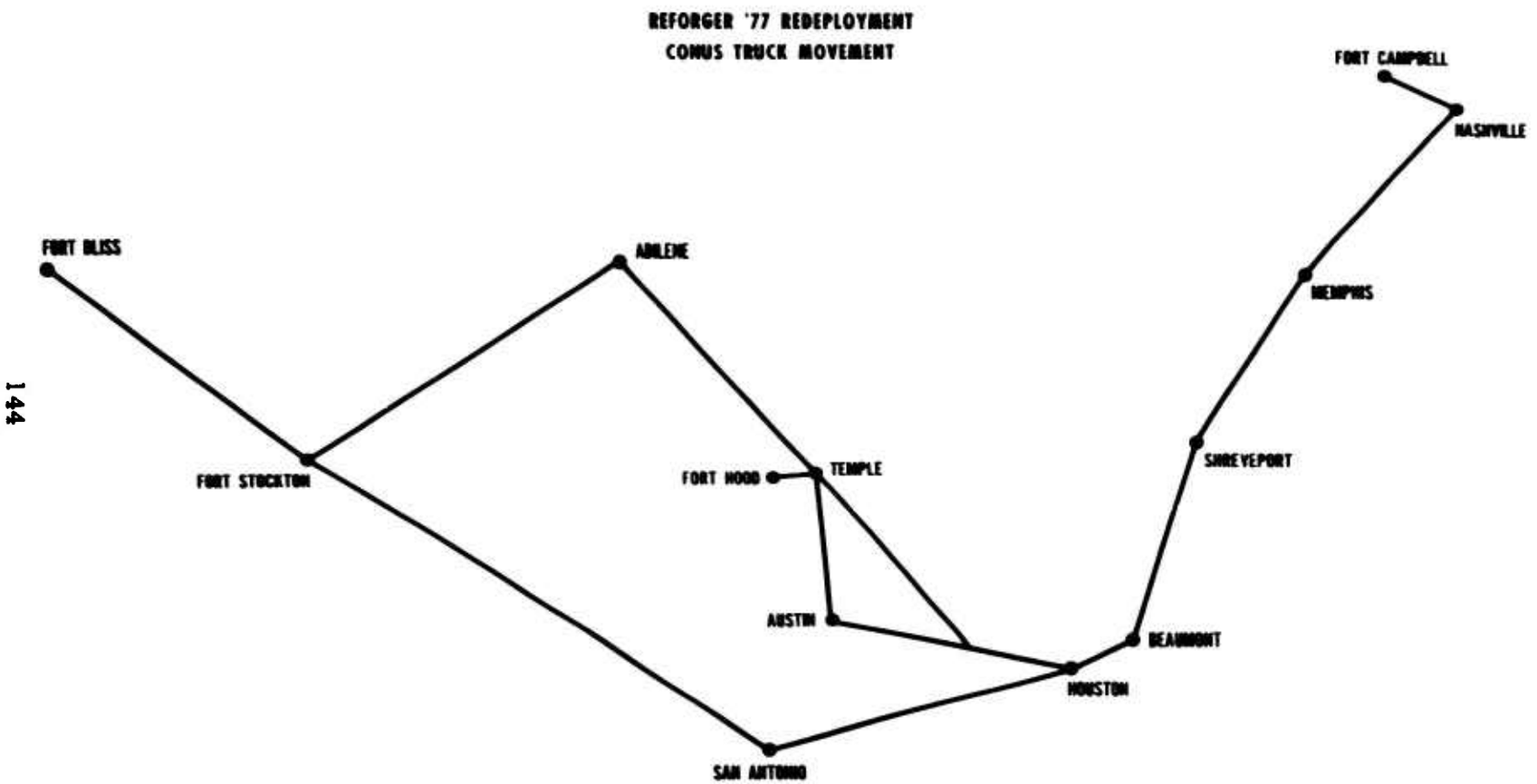

Figure 13-8. Highway routes from Beaumont.

car with a malfunctioning drawbar. The last set-aside railcar arrived at Fort Carson at 0945 hours on 20 November 1977.

(3) REFORGER equipment transported on the Beaumont train arrived at Fort Carson undamaged.

4. Summary.

a. The redeployment CONUS line-haul of REFORGER 77 equipment from the SPOD to home station was successfully concluded with the delivery, on 20 November 1977, of the last set-aside railcars from train number 5.

b. Equipment was transported with minimum damage. Monitoring of en route status of the highway and rail movements was excellent. Coordination between commercial highway and rail representatives and MTMC operations greatly enhanced the proficiency of the CONUS line-haul operations.

c. Close scrutiny of rail load-tiedown equipment, to include chain devices and turnbuckles, is a continuing requirement for rail movement.

SECTION XIV

PROBLEM AREAS

1. General. The preceding sections of this analysis presented detailed discussions of the various phases of MTMC participation in REFORGER 77. Although the overall mission was accomplished satisfactorily, problems were encountered. Some of these problems were minor and were resolved on the spot. They are addressed in previous sections and are highlighted in each section summary. There are, however, eight major problem areas that warrant special attention. Each is identified and discussed separately in the remaining paragraphs of this section.

2. Cargo documentation procedures for unit moves. The primary objective of revised REFORGER 77 documentation procedures was to alleviate the administrative burden imposed on the deploying units utilizing MILSTAMP procedures. This objective was accomplished; however, the administrative burden associated with producing an individual TCMD for each piece of equipment was not eliminated, it was merely shifted from the shipping unit to the MTMC ocean terminal. The end product (ocean cargo manifest) was more complete and accurate for REFORGER 77 than for REFORGER 76, but intensive management, requiring excessive time and manpower, was necessary to properly compile, annotate, and distribute the individual TCMDs. When all unit equipment moves through the same SPOE, is transported on dedicated ships, moves in isolation, and is monitored by unit representatives at the SPOD, there is no need for individual control for each shipment unit. The larger the deployed force, the more unmanageable individual documentation control procedures become. Two possible documentation alternatives are presented in section V of this analysis.

3. Deployment equipment data for planning. Although a deployment equipment list was available earlier in this year's REFORGER planning cycle than in the planning cycle for REFORGER 76, it was still not early enough nor accurate enough for detailed cost planning by all participants. TOE data were used by MTMC to produce cost estimates for CONUS linehaul, CONUS and European port handling, and ocean transit charges. Early designation of the unit(s) to be deployed and their specific equipment lists will increase the accuracy of MTMC estimates and facilitate port selection, shipload planning, and overall transportation movement planning.

4. Railcar loading and tiedown training. Unit rail outloading training was inadequate. The MTMC offers to conduct rail loading and tiedown training were not accepted by Fort Riley and were accepted only to a

limited degree by Fort Carson. The lack of comprehensive division rail outloading training led to inconsistent tiedown, chocking, and blocking methods and to recurring noncompliance with AAR loading rules.

5. Equipment preparation for shipment. The state of unit equipment movement preparations adversely affected transportation operations. The most serious deficiency was a lack of tiedown shackles on vehicles, causing operational delays in railcar and shiploading tiedown. Shackles had to be obtained or improvised tiedown procedures employed. Improper banding of trailers and CONEXs required that equipment be rebanded en route to the SPOE and at the SPOE. Some cargo trucks and trailers contained plywood frames that increased the overall height of the vehicle; hence, the actual height of the vehicle was not shown on the equipment list, and ship stow adjustments had to be made. Other deficiencies included: M-60 tanks arrived at the SPOE without gun tube travel locks; vehicles were locked with chain and lock, and keys were not readily available at time of railcar discharge; helicopter keys were not available at the SPOD, thus delaying test flights; and, on redeployment, unsecure equipment was loaded in the cargo trucks. In addition, there were cases of overprotection of vehicles; that is, boxing of jeep windshields, banding of the M-880 cab area with cardboard to protect the windows, and taping of headlights, taillights, and reflectors.

6. Shipment of hazardous, sensitive, and classified equipment. The failure of the shipper to properly identify, mark, and document CONEX and electrical equipment shelters caused violations of regulations concerning the shipment of hazardous cargo, sensitive items, and classified material. MTMC port officials were required to devote extra time to the resolution of these discrepancies. Unit representatives at the ports must know the content of containers, and proper documenting procedures must be followed at origin.

7. USNS Comet stern ramp. The length of the USNS Comet stern ramp is 29 feet 6 inches. When used with the low-level RORO ramp at Ghent, Belgium, the shortness of the ramp caused a steep ramp angle. Although modifications were made to the ramp, it was only marginally satisfactory. In future operations, stern-ramp discharge of RORO equipment from the USNS Comet to low-level quay ramps should be avoided, where possible.

8. Redeployment prestow planning. The deployment stow plan was used for redeployment shiploading. Equipment condition, seasonal sea conditions, and ship master's desires may require changes to any plan. This occurred at Bremerhaven during REFORGER 77. The templates used to prestow the ships in CONUS should have been made available to TTGE;

hence, the availability of this material during REFORGER 77 would have greatly assisted Bremerhaven Terminal in managing the adjustments made to the GTS Callaghan stow plan.

9. The use of CONEXs for unit equipment and accompanying supplies. The continued use of CONEXs in deployment exercises should be challenged. While the CONEX is indeed easier for the unit to handle in the field, it is being deleted from the Army equipment inventory. Also, the maintenance condition of the CONEX is poor (that is, doors do not close properly, sides are rusting, and banding is required). The Army MILVAN is more suitable for shipment on modern ocean vessels and should be utilized in place of the CONEX. Regardless of the type of container used, redeployment changes require that containers be marked with revised weight and content. This was not accomplished during REFORGER 77.

10. The MTMC reporting system and discrepancy recording. These two areas were not specifically addressed within the body of this report since they did not relate directly to any one phase or operation of the exercise; however, they warrant comment and consideration in the planning and execution of future REFORGER exercises.

a. MTMC REFORGER 77 reporting system. The established MTMC REFORGER 77 reporting system situation reports (SITREP), proved to be a valuable, timely management tool that was an improvement over REFORGER 76 reporting. Data reported was concise and factual, for the most part, and provided the cargo movement information required; however, there were instances where misinformation was reported, and also significant items that were not reported. It is incumbent on personnel at all levels to insure that derogatory comments be verified and that significant, or potentially significant, problem areas be fully addressed and immediately reported.

b. Discrepancy recording. Discrepancy recording (cargo damage or component loss) proved to be excessively burdensome and time-consuming, especially at the Beaumont SPOD, where extra care was taken to identify storm-induced damage to equipment aboard the SS Washington. While AR 55-38 provides adequate guidance for recording and reporting equipment condition exceptions during cargo movements, its applicability to REFORGER, which involved high-volume, time-constrained movements of military equipment, is questionable. Two solutions are apparent.

(1) Clearly pinpoint the origin of damage or loss by a technical inspection or similar review, and record the equipment condition on DA Form 2404 (Equipment Inspection and Maintenance Worksheet). Obviously, such a procedure would require more personnel than are now

available at each site where equipment loading, unloading, and staging take place and might prove not to be cost-effective. (If implemented during REFORGER 77 deployment, six different inspections would have been required.)

(2) Report only major damage or component loss for REFORGER cargo, except damage to high visibility or sensitive cargo. This elimination of reporting may be justifiable in view of the extensive number of minor discrepancies resulting from long and hard maneuver use and from the complexity of implementing an accurate and thorough damage reporting system.

SECTION XV

COMPARISON OF REFORGER 76 LESSONS LEARNED AND REFORGER 77 PROCEDURES

1. This section compares the lessons learned during REFORGER 76 with the procedures applied in each comparable area during REFORGER 77. The comparison first will identify the REFORGER 76 lesson learned and then explain the actual REFORGER 77 procedure used which incorporated the experience gained in REFORGER 76.

a. Preliminary planning.

(1) The REFORGER 76 lesson learned was that the preliminary planning for unit oversea deployment must include onsite rail surveys of the outloading installation(s), both SPOE and SPOD under consideration, and of the ships to be employed.

(2) REFORGER 77 procedure.

(a) A rail outloading capability study of Fort Carson, Colorado, was conducted and published in July 77. A rail survey of Fort Riley was not considered necessary because the minimal movement requirement was well within the known Fort Riley rail outloading capability. (Fort Riley is included, however, as an installation to be surveyed as part of the MTMC ongoing project to conduct rail outloading capability studies of major combat troop installations.)

(b) Surveys of SPOE and SPOD were conducted early in the planning stage of REFORGER 77.

(c) Prior to the commencement of shiploading operations at MOTBY, a complete survey of the GTS Callaghan and the USNS Comet was conducted to compare each hold with the appropriate prestow plan. The SS Washington was surveyed while in the Norfolk shipyard to validate measurements, identify unmarked obstructions, and document tiedown patterns on decks.

b. Unit cargo movement data.

(1) The lesson learned was that accurate and timely unit cargo movement data must be provided by the deploying unit early in the planning phase.

(2) REFORGER 77 procedure. The accuracy and timeliness of unit cargo movement data was significantly improved for REFORGER 77; however, further improvement is required for future exercises.

c. Port organization.

(1) The lesson learned was that a flexible, tailored port organization under a MTMC port commander must be established to handle water terminal operations during unit surface deployments. This organization must be responsible to the MTMC port commander and discharge its functions under his operational control.

(2) REFORGER 77 procedure:

(a) In CONUS, MTMCEA established an organization responsible to the Commander, MTMCEA. This organization provided operational control over all elements that performed and/or supported REFORGER 77 port operations.

(b) In Europe, MTMC TTGE, in coordination with Host Nations, established joint MTMC/Host Nation port organizations in Amsterdam, The Netherlands, and Ghent, Belgium, for the deployment phase of REFORGER 77. The organizations were responsive to the requirements of the 4th Transportation Brigade and 21st SUPCOM (USAREUR's executive agents). Water terminal functions were clearly defined and the port organizations provided operational control of water terminal operations.

d. Movement documentation procedures.

(1) The lesson learned was that movement documentation procedures should be simplified. REFORGER 77 documentation should be closely monitored to identify possibilities for streamlining current Military Standard Transportation and Movement Procedures (MILSTAMP) requirements.

(2) REFORGER 77 procedure. A simplified documentation procedure was used for REFORGER 77. The primary objective of the procedure was to alleviate the administrative burden on the deploying units. This objective was achieved, and the documentation procedure worked well. The administrative burden, however, was shifted from the shipping unit to MTMC. It is questionable whether the documentation procedure used would be satisfactory for a high-volume force deployment. It is recommended that documentation procedures be further simplified for unit deployments using dedicated shipping. (Documentation recommendations are included in Section V of this analysis.)

e. Helicopter covers and positioning device.

(1) The lesson learned was that the "redi-cover" used for CH-54 and CH-47 aircraft should be redesigned, and an improved helicopter positioning device should be developed for use on shipboard and possibly on cargo aircraft.

(2) REFORGER 77 procedure. Since only three helicopters were deployed, neither of these recommendations was applicable. These recommendations should receive attention during future REFORGER exercises. (Note: The MTMCTEA is currently designing an improved helicopter positioning device.)

f. Use of vehicle cargo space.

(1) The lesson learned was that units deploying by surface means should use cargo-carrying vehicles to the maximum extent possible for transporting military equipment and accompanying supplies.

(2) REFORGER 77 procedure. There was a significant improvement in the use of vehicle cargo-carrying space (VEHCAR) during REFORGER 77. The use of cargo-carrying space must continue to receive emphasis during future REFORGER exercises.

g. Technical assistance teams.

(1) The lesson learned was that rail outloading and documentation technical assistance teams should be provided by MTMC to the outloading installation(s) for initial operational planning, classroom instruction, and practice loading at least 90 days prior to the actual loadout.

(2) REFORGER 77 procedure. Both documentation and outloading technical assistance teams were provided by MTMC to the 1st and 4th Infantry Divisions during actual loadout. The assistance provided in documentation matters was effective. Rail outloading training was accepted only at Fort Carson, late in the predeployment cycle, and was marginally effective (sec VI).

h. Other less significant planning and operational problem areas were identified during REFORGER 76. In general, and where applicable, corrective action was taken during REFORGER 77 operations.

2. Conclusions. The lessons learned during REFORGER 76 contributed significantly to the success of REFORGER 77.

SECTION XVI

CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions.

a. General. This analysis reviews the performance of the Military Traffic Management Command in the discharge of its responsibilities in support of REFORGER 77 and evaluates the adequacy of that performance. Starting in November 1976 with the formulation of initial concepts and requirements, MTMC and its subordinate elements were deeply involved in the planning and execution of its DOD traffic management mission in support of this annual display of military capability. While not without its moments of difficulty and challenge, REFORGER 77 again proved that with adequate preparation and professional execution the transportation system works. Proof of its effectiveness, in the final analysis, rests on the successful deployment to and redeployment from Europe of REFORGER units and equipment within the planned time frame. The coordination and cooperation of military and civilian transportation planners and operators, both domestic and foreign, insured this success. A tank-heavy brigade from the 4th Infantry Division (M)/, Fort Carson, Colorado, a battalion-size unit from the 1st Infantry Division (M), Fort Riley, Kansas, and selected elements from four other CONUS installations moved from home station to Bayonne, New Jersey, on 5 trains and 35 commercial trucks for staging and loading aboard 2 MSC-controlled vessels. Shipments of 37,518 MTON, consisting of 3 helicopters, 291 tracked vehicles, 974 wheeled vehicles and trailers, and 227 items of miscellaneous cargo, were processed through two commercial European ports. These items were received by the deploying troops who had been flown overseas by the Military Airlift Command. REFORGER cargo was returned by rail to the port of Bremerhaven, Germany, and by Rhine River barge to Rotterdam, The Netherlands; then it went by MSC ships to Bayonne, New Jersey, and Beaumont, Texas. Rail and commercial highway assets were used for the final legs to home stations. Deploying cargo arrived in Europe within the prescribed delivery time; however, during redeployment a severe winter storm delayed the arrival of the SS Washington in CONUS by 10 days.

b. Specific.

(1) Early in the planning cycle deployment exercise planners must have available to them accurate equipment lists for the development of transportation requirements and for evaluation of support capabilities (sec III). COMPASS data provided by FORSCOM are adequate for this purpose if purged and updated to reflect the actual unit equipment that will be deployed.

(2) Physical surveys of ships to be utilized for REFORGER exercises guarantee that shipload and prestow planners have up-to-date ships' characteristics data that depict the actual ships' configurations and permit accurate stow planning (sec IV). Ship surveys conducted prior to REFORGER 77 deployment did reveal characteristics that affected stow planning.

(3) MILSTAMP documentation procedures, while streamlined for REFORGER 77, continue to be burdensome and excessive for a unit move utilizing dedicated shipping. These moves, which involve multiple quantities of like equipment owned by the same unit by dedicated transport modes, do not demand the individual piece control required by normal cargo movement (sec V).

(4) Although rail outloading schedules were met by deploying units, a much more efficient and timely outloading process would have been possible had a more comprehensive rail outloading training program been conducted. Increased training emphasis helps insure that unit personnel are familiar with approved blocking, bracing, securing, and protective measures (sec VI). Rail outloading learning was rapid during REFORGER 77, but it appears doubtful that such learning time would be available during a contingency move.

(5) CONEXs utilized during REFORGER 77 were in many instances unsecurable and hazardous (sec VI). The continuing decay of these non-replaceable CONEXs makes mandatory the use of the standard MILVAN during future REFORGER exercises.

(6) Not all sensitive and hazardous cargo received the required attention and special handling, due to failure of the shipper to adequately identify these items. Actions taken by port operators, during both deployment and redeployment, eliminated the chance of further compromise and danger; however, the question of possible undiscovered discrepancies remained (sec VIII). Deploying units must be familiar with and comply with the provisions of applicable regulations.

(7) The final iteration of COMPASS data proved to be adequate for prestow planning; however, when unit vehicles arrived at the SPOE, several were found to be configured for special use. Had the provisions of AR 220-10 been followed, or vehicle variation reported in COMPASS, last minute prestow efforts would not have been required. Also, unnecessary vehicular protective measures applied by the shipper hindered loading operations, as did the large number of missing vehicle tiedown shackles (sec VIII).

(8) The characteristics of each ship must be matched with the characteristics of each port planned for use to insure compatibility. The kind of difficulties that arose because of the length of the USNS Comet stern RORO ramp and the resulting steep angle to the quay must be considered in planning future operations (sec IX).

(9) Redeployment port operators must consider seasonal shiploading requirements and stow adjustments necessitated by cargo condition and availability, by continuously documenting stowage changes to the prestow plan to insure acceptance of all planned cargo (sec XI).

(10) Various planning, operational, and procedural problems have been identified throughout this report (sec III through XIII); the most significant are covered here. Although not highlighted, the remainder deserve careful consideration to insure that insofar as possible these deficiencies are not repeated in future deployment exercises or operations.

2. Recommendations. It is recommended that:

a. Accurate equipment lists, updated in a timely manner, be provided to the transportation planner early in the planning cycle. COMPASS data compiled by Forces Command, from information provided by the deploying unit, is the most usable format.

b. The practice of surveying vessels to be used during REFORGER oversea movements continue. Early identification of restrictive conditions is essential for accurate planning.

c. Documentation procedures for unit moves involving dedicated shipping be further simplified. While minor modifications made during REFORGER 77 decreased unit documentation requirements, an overall system modification appears warranted.

d. MTMC continue to offer rail outloading training assistance to deploying units well in advance of actual outloading and that rail outloading and documentation assistance be provided. Further, that MTMC recommend to Forces Command that rail loading training be given added emphasis.

e. For future REFORGER exercises the standard MILVAN be utilized vice the CONEX for the movement of general equipment and impedimenta.

f. REFORGER units be specifically advised of requirements for documenting and marking sensitive and hazardous cargo during REFORGER

planning conferences, and that Forces Command be encouraged to stress the importance of complying with the applicable regulations governing these areas.

g. Deploying units comply with the provisions of AR 220-10 in the preparation of vehicles for shipment, specifically as it applies to vehicle configuration and protective measures, and that any required deviations be reported promptly to MTMC.

h. RORO ship's ramp limitations be considered early during port planning to insure compatibility with the receiving port facilities.

i. Port operators carefully document deviations from the stow plan to assure acceptance of the allocated cargo by designated shipping assets.

j. The various planning, operational, and procedural problems identified in this report (secs III through XIII) be noted and corrective action taken in future deployment exercises and operations.

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4th Infantry Division
Ft Carson, CO 80913 (4)

Commander
5th Infantry Division
Ft Polk, LA 71459 (4)

Commander
7th Infantry Division
Ft Ord, CA 93941 (1)

Commander
9th Infantry Division
Ft Lewis, WA 98433 (1)

Commander
24th Infantry Division
Ft Stewart, GA 31313 (1)

Commander
82d Airborne Division
Ft Bragg, NC 28307 (1)

Commander
Central Army Group Europe (CENTAG)
ATTN: G-4
APO New York, NY 09099 (2)

Commander
1st Corps Support Command
Ft Bragg, NC 28307 (3)

Commander
21st Support Command
APO New York, NY 09227 (3)

Commander
160th Contract Supervision Team
Ft Eustis, VA 23604 (1)

Commander
140th Contract Supervision Team
Ft Bragg, NC 28307 (1)

Commander
MTMC BENELUX Terminal
APO New York, NY 09159 (3)

Commander
MTMC Bremerhaven Terminal
APO New York, NY 09069 (2)

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This study is an analysis of the (MTMC) participation in the REFORGER 77 exercise. ~~It is designed to provide~~ → provides a documentary narrative of the exercise deployment and redeployment, and an evaluation of the MTMC performance in the discharge of its REFORGER mission. Although problems in planning and execution have been identified and corrective actions recommended, the deployment and redeployment of the 1st and 4th Infantry Divisions (Mechanized)(-) was a highly successful operation. → over

(see reverse)

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20. Abstract (continued)

REFORGER 77 clearly demonstrated the Defense Transportation System's total approach capability to support the movement of the equipment of a mechanized infantry division from a CONUS origin to a potential combat employment destination overseas.

SUPPLEMENTARY

INFORMATION

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MILITARY TRAFFIC MANAGEMENT COMMAND
TRANSPORTATION ENGINEERING AGENCY
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NEWPORT NEWS, VIRGINIA 23606

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13 July 1978

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ALLEN J. DOWD
Director

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